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Hydraulic Architecture.

No portion of the duty of either the architect or the engineer is so difficult as that which relates to hydraulic constructions. There are many reasons for this, such as the great cost and trouble of obtaining foundations below water, the different behaviour of various kinds of cement, and of other materials, in the air and in the water, the variation in the stability due to weight, from the buoyant action of the water, and other causes. But probably the chief difficulty lies in the absence of satisfactory theory. For all kinds of terrestrial structures, from the simplest form of cottage to the loftiest vault, burdened with impossible pendants, or soaring between flying buttresses and pinnacles, the definite mathematical law can be detected and expressed. It is true that the draughtsman rather leans on practice and experience than on geometric or algebraic analysis. But if the latter be wanted, in the case of any new and unprecedented construction, it is attainable; and within the last few years, as those columns of our own which are devoted to reviews bear ample witness, so much thought has been given to the subject of the graphic solution of structural problems that there is hardly a question which can be put to the architect of which he cannot work out the answer on the drawing-board.

The case is far otherwise when water has to be taken into account. Instances of the disastrous failure of costly works for hydraulic purposes are not so rare as might be desired. Thus in May, 1847, the Government of India directed that the works on the Ganges Canal, designed by Sir Proby Cautley, should be vigorously carried out. Water was admitted into the canal in April, 1854, but during the next few years defects in the work came gradually to light, the chief of which was the "excessive declivity in the bed of the main channel, which caused a velocity of current greater than the sandy soil was calculated to withstand without erosion" (Buckley's "Irrigation Works of India," p. 101); yet the gradient was only 18 in. per mile. In 1863 Sir Arthur Cotton estimated the alterations and additions to this canal at 2,725,000*l.*; and proposed to reduce the inclination of the bed of the canal by from 3 in. to 6 in. per mile. But there is no doubt that Sir Proby Cautley had followed the formula of Dubuat, which at the time was, and indeed still is, an accepted authority for the setting-out of canals.

But we need not go to India for an illustration of the imperfect acquaintance with hydraulic law which is as yet characteristic of the state of science. As recently as 1864 the Mersey Board so far completed the works of the Low Water Basin at Birkenhead that water was run for the first time through the sluicing conduits. "But from some cause," says Mr. Ellacott, in his description of the basin (Min. Proc. Inst. C.E., vol. xxviii., p. 525), "which was never clearly accounted for, such a violent shock was communicated to a portion of the masonry forming the back of the landing-stage recess, that the wall was instantly forced over 5 in. out of the perpendicular. Except for the purpose of sluicing under the landing-stage, no further attempt was made to run the water through the culvert. No trial was ever attempted of the corresponding culvert on the north side of the basin." Again, "on January 25, during the fourth trial of the sluices, the gates of the north channel were torn from their fastenings, and swept into the chamber. On the 21st of July the gates of the south sluicing-chamber were carried away in a similar manner." After the 15th of November, 1864, when the last trial of the sluice was made, it was found that the sheet piling in front of the apron was bare on the face to a depth of 4 ft., that a hole 9 ft. deep below the finished bottom of the basin had been excavated by the water, so that the piling had parted from the masonry of the apron. On the 23rd of November the water was pumped out of the chamber, when it was found that a large part of the floor had been torn up, and the concrete and piles laid bare in several places. It became clear that the action of the sluices was attended not only with much inconvenience and hindrance to business, but also with a considerable amount of danger. In fact, so unmanageable were these sluices, with a head of only 14 ft. 3 in. of water, which gave to the issuing current a velocity of twenty miles per hour, that the low-water basin, on which 470,252*l.* had been spent, had to be abandoned, and converted into a wet dock.

It is true that Mr. Rendel, the original designer of the sluices in question, was unfortunately no longer surviving to carry out his plans. But the law of the flow of water from an orifice under a definite head is so well known that it is not to be thought possible that the velocity of the current exceeded that anticipated. What was wanting was experience as to the inability of even the most carefully-constructed masonry to resist the effects of such a flow of water. From this point of view the failure of the Birkenhead sluices is highly instructive.

Scarcely less significant were the casualties that occurred in 1855, during the construction of the Victoria Docks, designed and executed by Mr. Bidder. These docks are entered from the Thames through a lock 80 ft. wide at the bottom, 326 ft. 6 in. long from gate to gate, and with a depth of 10 ft. on the cill at low water. The walls of the dock are of concrete, faced with piling, and 20 ft. thick at the bottom. The portion of the chamber containing the gates is of brickwork, and the bottom between the walls is lined with 7 ft. 6 in. of concrete, or with 6 ft. of brickwork. The top of this continuous invert is 25 ft. 6 in. below Trinity high-water mark. On Sunday, 17 June, 1855, great progress had been made on the works; the upper and lower gates had been lifted into their places, the caisson was nearly completed, the bottom of the large dock of 74 acres had been puddled; and the removal of the river bank, and dredging at the entrance, was nearly all that remained to be done. There had been no symptom of weakness, nor any premonition of what was about to take place, except that on the previous day some joints in the coping on the south side were observed to be a little open, but to so slight an extent that the circumstance was not reported. The next day, however, in the afternoon, the portion of the north side between the upper and lower gates began to give way, moving forward bodily into the lock, pushing up the thick puddle towards the centre, bending and breaking the tie bars behind, dragging the tie piles forward, and, in some instances, breaking them off. A few hours afterwards the south side failed in the same way, but the brick walls and platforms remained intact.

This large and sudden failure was accounted for (Proc. Inst. C.E., vol. xviii. p. 463) on the ground that the continuous pumping which had been carried on for two years, night and day, in order to get in the foundations of the lock walls, had drained the country over a considerable area. The water in a well at a distance of 2¼ miles from the docks had been lowered during this pumping, and rose when it ceased. At the time of the accident the pumping had been discontinued for some weeks, and 3 ft. of water had been allowed to collect in the dock, to test the puddle. It was excluded from the lock chamber, and it was thought that the hydraulic pressure accumulated at the back of the wall and forced them bodily inwards. Fractures of the pivot casting, and abrasion and splitting of the roller-path, also took place.

The Avonmouth Dock was designed by Mr. Brunlees; commenced in August, 1868, and opened for traffic in February, 1877. It has an area of 16 acres, being 1,400 ft. long and 500 ft. wide, and is entered from the Severn by a lock, which has a clear length of 454 ft. between the inner and outer gates, and is 70 ft. in width. The range of tide for which the gates have to provide is 43 ft. 10 in.; the width of the dock wall at the base, 2 ft. above the dock floor, is 16 ft., and the width at the top is 10 ft. 6 in. When about 247 lineal yards of this section of wall had been built up to the level of the

coping, and the b cking was well advanced, a failure of about 0 yards occurred. The wall broke through from top to bottom in the middle of this distance, slid forward 12 ft., and sank 4 ft. 6 in. Where not affected by this slip, the wall showed no tendency to slide out of place, but an inclination to overturn by coming forward at the top. It was built with a batter of 3 ft. 4 in. from floor to coping, but when the forward movement ceased, the batter measured only 1 ft. 4 in. The part of the wall that slipped forward maintained its original batter.

When the east wall was finished and backed up to nearly its full height, and within a few days from the date fixed for letting water into the dock, a subsidence of about 140 yards of the most recently completed portion took place. The movement was of a similar kind to that which had occurred on the opposite side. At the apex or breach, the wall slipped forward 15 ft. 6 in., and sank 7 ft. 6 in. The dock floor in front was thrown up 10 ft. in height for a distance of about 60 ft. The breach in the wall was much larger than in the other case, and extended through the foundations. This portion of the wall was founded at an average depth of 9 ft. below the bottom of the dock, and the whole of the foundation moved forward with the slip. Both accidents occurred on a Sunday night, when no men were at work, and two hours before the occurrence of the latter failures nothing unusual was to be seen in the wall.

In the discussion which took place on the Avonmouth Dock at the Institution of Civil Engineers on December 12, 1878, Mr. Walmsley Stanley remarked that before designing the walls of a dock the exact nature of the strata on the line, and for some distance on each side of the walls, should have been ascertained. He regarded the foundation for the docks at Avonmouth as exceptionally good. They rest on a bed of fine grey sand underlying the clay at an almost uniform level throughout its length, and at a depth of 6 ft. below low water of equinoctial spring tides. The trial borings were only carried 10 ft. deeper, and the pile-driving gave no signs that the sand had been passed through at a depth of 25 ft. Springs were frequent in this sand. A layer of 6 in. of clay had been sufficient to keep these down, but when this was removed they burst out in various places, and in some had to be provided with permanent outlets. The question is very pertinent. "Were these failures through any new elements of danger, or new combination of elements, or did they arise from want of proper examination before the design and execution of the work?" Whatever reply be given to this question the special study that is requisite for works of the kind is abundantly proved by these serious failures.

In the year 1864 it was found necessary to extend the dock accommodation at Belfast. The foundation for the wall of the new Abercorn basin was firm sand, so that it was not considered necessary to do more than drive in front of the wall a close row of sheet piles, 12 ft. long and 6 in. thick. At the Dufferin and Spencer docks the substrata were soft and unreliable, and 15 ft. bearing piles of round larch were introduced. Battens and sleepers were laid on the heads of these piles, and covered with 18 in. of concrete, on which the masonry, 16 ft. in width at the bottom were built. These walls showed weakness from the first. As the backing proceeded, the symptoms became more serious. Two years after the erection of the entrance to the Spencer tidal dock a length of 70 yards of the wall fell bodily forward into the entrance. It fell outwards at the top, pivoting on its toe, and broke the bearing piles across about their middle, 6 ft. or 7 ft. below the bottom of the wall. The sleepers, concrete, and tops of the piles adhered to the masonry, which had to be removed by divers. The nature of the backing used, which seems to have exerted on the back of the wall a semi-fluid pressure perhaps double of that due to hydraulic head, together with the soft foundation, are enough to account for the Belfast failures. Still the same question recurs, Was not the nature of these materials known beforehand? and should it not have been more skilfully dealt with?

Closely combined with the important question of the security of the foundation of hydraulic works is that of the true principles on which their dimensions should be determined. While adequate size is demanded by the exigencies of traffic, any undue or unused excess of dimensions is at the same time a cause of increased cost and of increased risk. In hydraulic works the ruling dimensions must be determined in consistence with those of the craft which it is intended to accommodate. As to this, the present course of shipbuilding is, to some extent, in favour of restricted rather than of increased width, although in those dimensions which provide for the length of craft there is advance rather than decline. The gates of the Canada Dock at Liverpool, 100 ft. wide, were constructed for paddle-box steamers. So great a width is not needful for a screw-ship. It is plain that the extreme dimensions in length, breadth, and width, plus a certain allowance for clearance, of the craft which it is designed to accommodate, should be taken as the ruling dimensions for hydraulic works. For locks, a foot or two of clearance in each direction may suffice; for docks, basins, and canals, 25 per cent. of width and depth will hardly be too much to allow for clearance. Room in excess of this will involve waste. The present proportions used by shipbuilders give from eight to ten beams to the length, and locks that are not in this proportion either for one or for a pair of vessels involve great waste, both in construction and in supply of water. Thus the 454 ft. lock at Avonmouth could accommodate the largest vessel that is now likely to pass it if it were 45 ft., or, at the utmost, 50 ft. wide. A dock entering from the tideway can hardly be expected to admit two vessels at a time, convenient as this arrangement is on a canal; but if two vessels, say of 38-ft. beam, were docked at the same time at Avonmouth, there would be a useless length of 50 ft. or 60 ft. in the lock.

The want of intelligent foresight in the adoption of dimensions that shall be adequate, and not more than adequate, for the work that a structure is intended to facilitate, is remarkably evinced in the dimensions of our canal locks. Thus the line of canal communication between the water of the Thames and that of the Trent is made by two different lines. A boat arriving at Northampton by the Grand Junction Canal has to use the Grand Union Canal in order to go on to Leicester. But while the locks on the Grand Junction are 87 ft. 6 in. long, and 15 ft. wide, those on the Grand Union are only 78 ft. long, and 7 ft. 2 in. wide. As to the width, it may be urged that the narrow locks will admit a single boat, while the wide lock will admit either a barge or a pair of boats of the same width as will pass, singly, through the narrow lock. But as to length there is a positive discrepancy. A boat built for the Grand Junction lock will not pass through the Grand Union lock. A boat built for the latter, if it pass on the former canal, loses 10 or 15 per cent. in capacity, and involves a corresponding unnecessary loss of water at each lockage.

In no case is this absence of proper engineering consideration more conspicuous than in that of the Suez Canal. After an expenditure of 20,000,000*l.* on a water-way of eighty-eight geographical miles in length, extreme difficulty is felt in passing a traffic of 7,000,000 tons of shipping through the canal in a year. In 1882, 3,198 ships, of an average tonnage of 2,150 tons each, made the transit of the canal. This is not quite nine vessels per day, and yet it has been decided to expend a million sterling on the inefficient palliatives of intermediate basins. "For all steam ships, or vessels towed, varying between 280 ft. and 300 ft. in length," reported the Hydrographer to the Navy, in February, 1870, "with 35 ft. beam, and a draught of 20 ft., it will, with the improvements and appliances earlier described, be a convenient highway. . . . For the transit of vessels larger than those described the canal is not so well adapted." That the Indian transports, of "about 400 ft. long, with a draught of 22 ft. water, and beam of nearly 50 ft., can pass through the canal is undeniable; but no practical seaman need be told that in steering through what may be called a continuous dock ninety miles in length, less than 100 ft. wide, and with nothing showing above water to mark the centre of it, frequent grounding and consequent delay may be anticipated, though every possible care and precaution be taken. It is to be considered, also, that the midship section of one of these vessels bears about an average proportion of 1 to 4 to the deep water of the canal."

And yet the cross section of the Suez Canal, according to the final determination, contains 3,862 square feet beneath the water-line. The midship section of H.M.S. *Warrior* is 1,219 square feet. This is a much closer fit than the proportion named by the Hydrographer to the Navy. The *Warrior* made one of the fastest passages on record through the Canal, viz., in 12 hours 50 minutes. But her speed at sea was 14·35 knots per hour. But of the entire cross section of the Canal not more, in many parts, than 66 per cent. is in any way available for navigation. The only function performed by at least one-third of the area is that of allowing the water displaced by the passage of a vessel to return to the wake of the same, or that of the protection of the banks from wash (as to the latter, however, revetting with stone is being partially carried out). The passage of vessels is restricted to a speed of five knots, and no two vessels are allowed to cross in the Canal unless one of them be moored in a lay-by.

Of these "gares," or passing places, there are fourteen. It will thus be seen that thirty vessels are the utmost that can at one time be in course of transit through the canal, viz., fifteen under steam and fifteen in the lay-byes or terminal basin. At five miles an hour (and allowing only twelve hours in the day) it would thus take nearly two days to go through 100 miles of canal. But, as for half the time of transit, the vessels are in the lay-byes, the speed is reduced to 2½ knots, and the time of passage is extended to four days. Hence the just complaints of the shipping trade.

By the use of a scientific cross section, of equal area to that actually excavated, but with revetted sides, the capacity of the Suez Canal would have been increased in a proportion which it may seem fabulous to state. In the first place two 2,000-ton vessels would have been able to pass one another in any part of the canal, the vessel which had the wind against her slacking or stopping for the time of passing. This would at once raise the capacity of the canal from 30 to 200 vessels,—as a line of ships might follow one another, in each direction, with perfect ease a mile apart. In the second place the time consumed in passing would have been reduced by one-half; as no time would be lost in lay-byes. In the third place the cost of propulsion would have been reduced, as the hydraulic mean depth of the scientifically designed canal (the area of water divided by the wetted perimeter) which is taken by hydraulicians as a measure of resistance, is double that of the actual cross-section. And in the fourth place, as a curved bottom would be substituted for the present flat bottom, vessels of 4 ft. more draught than could pass the French canal could pass one constructed with the true hydraulic cross-section.

Important as these considerations are to the shareholders who have sanctioned the expenditure of another million for the construction of intermediate basins, which will little, if at all, increase the actual capacity of the canal for traffic, as above shown, we have but little hope that any remonstrance expressed in the English language will be likely to reach them. But if traffic is impeded by the contempt shown by politicians for hydraulic rules, it is to be hoped that this will not be altogether the case in England. Not a week now passes without signs of the revival of the public interest in canals. What has been done in England by canals is now being investigated; and the return of a certain portion of traffic to these cheap and silent high roads is now anticipated by every writer who touches on the subject.

Since the days of Brindley and of Telford great advance has been made in mechanical and in hydraulic knowledge. It is sufficient to compare the experiments of Mr. Froude, as they are described in volume xviii. of the Transactions of the Institution of Naval Architects, with those of Mr. Palmer and Sir John MacNeill, as described in volume i. of the Transactions of the Institution of Civil Engineers, to see how much has been done to determine the true dimensions of vessels, and how little has been done to determine the true dimensions of canals. According to the *formulæ* now accepted, the resistance to the passage of a vessel through the Suez Canal is just double that which would be encountered if the cross section, when of the same area, was of a better shape. We do not say that this is the case,—we only say that it is so according to the accepted *formulæ*. But with millions in the course of expenditure on the waterways of Europe, is it not lamentable that we should have to look in vain for the inauguration of those experiments, for the guidance of the hydraulic architect and engineer, of which

every member of the profession who has turned his attention to the subject at once acknowledges the importance and deplores the absence?

SPRING GARDENS: SITE FOR THE NEW GOVERNMENT OFFICES.

"The fate of things lies always in the dark;
What cavalier would know St. James's Park?
For Locket's stands where gardens once did spring,
And wild ducks quack where grasshoppers did sing."
"Art of Cookery."—Dr. King.

"The manner is . . . . to alight at the Spring-garden so-called, in order to the Parke, as on Thuilleries is to the course; the inclosure not disagreeable, for the solemnness of the grove, the warbling of the birds, and as it opens into the spacious walks at St. James's."
"A Character of England, 1659."
(Ascribed to John Evelyn.)

Passing along the Duke Humphrey's walk on his way from St. James's Palace to the scaffold before Whitehall, the royal Martyr discoursed with Colonel Tomlinson, who walked by his side, concerning the manner of his burial. At Spring-gardens, where it is said he stopped to rest awhile and take a cup of water, he turned to Dr. Juxon and Herbert, following in his footsteps, and pointed out one or two trees in the inclosure where the cows now stand. As will happen at so solemn and awful a juncture the king's thoughts reverted to the days of his childhood; he indicated the trees which he and his elder brother had planted when they were boys together. Cromwell's edict of 1647 had checked for a while the gaieties of a place which had formed a favourite resort of the idler and upper classes from the time when King Henry VIII., entering into occupation of Wolsey's York Place, took it for his palace at Whitehall.

The spring or fountain whence the Gardens derive their name is mentioned in Hentzner's Latin journal of his sojourn in this country at the end of the sixteenth century. He speaks of the sun-dial,—not to be confounded with those of Gunter and the Jesuit Francis Hall in Whitehall Privy Garden,—which attracted the notice of strangers, and looking at which they were suddenly sprinkled with water from the spring turned over them by the gardener. The water for this and other fountains in the Garden ran through conduits from St. James's Fields, one supplying the old pump over against St. James's Church, Piccadilly. The Gardens themselves, together with the northern half of St. James's Park, lie within the ancient parish of St. Martin's-in-the-Fields, in the year 1535 made independent of St. Margaret's, Westminster. The Egerton MSS. contain early notices affecting Spring-gardens: these include entries of payments for various works and repairs. One, of 29th November, 1601, is to George Johnson, keeper, for a scaffold he had erected against the Park wall here,—overlooking the Tilt Yard, now the Horse Guards Parade,* in order that the "Countie Egmond" might the better see the tilters.

This is the sumptuous wall of brick, to use the Lord Treasurer Cromwell's words, which in 1532 his royal master set round "all the meadows about St. James's," according to Holinshed, when he "there made a faire mansion and a parke, for his greater commoditie and pleasure." The meadows, in fact, represent the swamps and marshes which by the thirteenth century had encompassed the Cowford Pool. This pool (site of the Green Park hollow) the Eia or Aye replenished in its course from Marylebone Park to the King's Scholars' Pond some two hundred yards above Vauxhall Bridge. The Thames occasionally overflowed this tract, the *locus terribilis* of Offa's charter, A.D. 785, and outskirts of those dense woods and forests which then and for centuries afterwards bounded the north-east of London. In this instance Henry acquired the land, being about eighty-three acres in extent, honestly enough. He exchanged part with Eton College for Chattisham and other lands in Suffolk, and part for Poughley Priory, in Berkshire,† with the abbot and convent of West Minster. His "faire mansion," made out of the lazar house which pious citizens had long ago endowed in a then desolate and remote region, is that same Palace which gives a name to the at once most brilliant and most august Court in Europe. The "commoditie and pleasure" provided are quaintly but graphically delineated by Aggas in his map, for he fills the spot with stags and deer; Spring-gardens, too, he shows as well wooded and separately enclosed by a high wall.

Norden's plan of Westminster City (1593) gives the numerous water-courses branching off from Rosamond's Pond* at the Park's western end, haunt of the fish and water-fowl whose keeper is mentioned in State Papers of 1572. Close by is shown (as also in Hogarth's view) the mound stationed on which the Queen, on the 8th of May, 1593, had a goodly view of 15,000 citizens "besides wifflers and other awayters," all clad in "bright harness with coates of white silk or cloth and chaines of gold," as they marched in "three great batailles rounde about the Parke of St. James." Along the inclosure's eastern side were the cock-pit,† tennis-court, bowling-green, and tilt-yard, appertaining to Whitehall. Queen Elizabeth's "fortress or castle of perfect beautie" witnessed the jousts, military exercises, and similar displays of horsemanship so popular at that period; Gerard the while, in his search for simples, finding the small buglosse or ox-tongue in the dry ditch banks about Pikadilla,—that is, in the Green-park. Hither the redoubtable old knight Sir Henry Lee of Ditchling, came year after year to break a lance in championship of one who, at a reverend stage of life, loved to hear Sir Walter Raleigh, as a despairing lover, address her as Venus or as Diana, away from whose sight he could not live. Over the entrance from Whitehall, where the Horse Guards is now, was a metrical inscription in Latin preserved by Hentzner, bidding its readers to beware of Actæon's fate, and which probably referred to Elizabeth as the naturally pitying Virgin, to her rejection of Philip II. of Spain, and to the Armada's defeat. In the Queen's reign, and many years subsequently, the Park continued to be reserved for the royal family and household, being placed in charge of a keeper who received for salary 6*l.* 1s. 8d. annually.‡

With King James I.'s accession we find a bathing pond in Spring-gardens, fruit-trees trained *en espalier* along the walls, and the walks covered over with gravel. About this period, too, eighteen loads of turf are brought from Tothill-fields, that Henry Prince of Wales might the better practise his favourite diversion of shooting at the butts. The subject of William Drummond's "Mœliades" was wont to invite the foreign visitors at his father's court to share his prowess in the manly exercises. In the diary, for example, of Louis Frederick, Prince of Wurtemberg, we read that at eight o'clock on the morning of Thursday, the 3rd of May, 1610, he went to St. James's Park to run at the ring with the Prince, and afterwards breakfasted with him at Whitehall. King James doubled the keeper's salary, giving him the additional charge of his strange collection of pets, to which his sons and grandsons made many additions. These included, from time to time, the two antelopes presented by the Mogul, the hawks and sables from the Muscovite Czar, the King of Saxony's ounce-leopard, some crocodiles, the quessa-ouarroe (cassowary), the Balearian crane for which a soldier fashioned a wooden leg, and the "foure asses . . . . tow hees and tow shees . . . . and one ellefant," of which Buckingham writes in that very curious letter he sent to James from Spain. The royal menagerie was for the most part lodged in Spring-gardens, as is evident from an order (of the 31st of January, 1626) among the State papers for the annual payment for life of 72*l.* 5s. 10d. to Philip Earl of Montgomery, for "keeping the Spring-gardens and the beasts and fowls there." Though the park and gardens still remained closed to the public in general, an exception was made in behalf of the inhabitants residing in Petty France, where the back doors of the houses,—Milton's, and after him Hazlitt's, amongst the number,—communicated with the inclosure. In contrast with Cromwell's wanderings through the deserted rooms at Whitehall, his mind tortured by anxiety and remorse, with his moody pacing up and down the Park walks, sounding Fleetwood or Whitelock as to "what if a man should take upon him to be king?" is the picture of Elizabeth his wife playing at dairy-keeping in a cow-shed by Spring-gardens, or that other picture of King Charles II. now playing at pall-mall or sauntering with his spaniels and his courtiers by Le Notre's Canal and Decoy,—a scene so pleasantly sung by Waller and drawn by Hollar,—and now with rapid strides leaving them all far behind. Innumerable are the references made by the poets and dramatists, the diarists and De Grammonts of the time, to the Park and Spring-gardens in their altered aspect at the Restoration. Here the King uttered many of those witty sayings which go some little way in support of the dictum that Charles, in this the exact converse of his brother, could have been a good king if he would, and which redeem his personal memory in the judgment of a leniert posterity. Here he scandalises Evelyn, whose averted gaze perchance is fixed upon the lodging of yet another royal mistress, the Duchess of Cleveland, at Whitehall, by the tone of his discourse with pretty Nell at the garden of her house in Pall-mall,* and here it was he bade Prince George of Denmark, who complained of growing too stout, to hunt with his brother James, to walk with him, and to do justice to his niece. As years go by we may picture the Gardens filled with the Silvias, Clarindas, and Elviras, their swains the Philanders and Strephons,—pretty fellows,—of the *Spectator;* we may see Swift and Prior trotting round the Park together, the one because he was too thin, the other because he was too fat; many a Sir Plume, with his amber snuff-box and clouded cane; many a Sir Fopling Flutter, redolent of pulvillio, with his Mrs. Loveit and Bellinda; Queen Caroline's beautiful Marys; Hogarth sketching the landscape and company by Rosamond's Pond, pool of ill presage to despondent love; Richardson hoping Lady Bradshaigh will recognise in him the original of the description of himself, which she was "mighty curious to obtain"; "those goddesses," as Lady Mary Wortley Montague styles them, the Gunnings,—fresh from the manor-house at Hemmingford Abbotts by the Ouse; a Beau Tibbs, who "blasts himself with an air of vivacity at seeing nobody in town"; and but too often poor Goldsmith himself, *impransus*, in the character of his own famishing Jack Spindle.

It was in the Spring-gardens bowling-green that the loyal Scotsman Wilson snatched off the hat of the Duke of Buckingham, who alone stood covered in the presence. We are not told what followed upon Wilson's answer to King Charles that were he allowed he would tell that of this man which many knew though none durst speak. But we do know that Charles I. soon commanded the Gardens and bowling-green to be closed through the disorderly conduct of their frequenters.† These latter, however, were soon accommodated by an enterprising barber, servant to the above-named Lord Montgomery, who established between the Haymarket and Hedge-row (Whitcomb-street) a new gaming-house with two good bowling-greens, the popular Shavers' Hall, of which the tennis-court exists in James-street next door to the old barn and coach manufactory. Re-opened under conditions so more favourable that staid John Evelyn could take the ladies of his family and collation, as he employs the term, there, Spring-gardens was again closed at Cromwell's order for a few months, when the Mulberry Garden formed "the only place of refreshment about the toune for persons of the best quality to be cheated in."‡

The bricklayers and masons of the Restoration marked Spring-gardens for their own. In vain did the inhabitants of Charing-cross, taking alarm at the spread of houses in St. James's Fields and Pall Mall, petition against the invaders. Sir Charles Cotterell, his Majesty's Master of the Ceremonies, secures a building plot; the next year (1662), Thomas Elliott, groom porter, obtains another. Similar encroachments followed, and though the Gardens preserved to the last that aspect of rural beauty with their trees, flower-beds, and rose-tree hedges, which so delighted the author of

* The infantry guard there is still called the Tilt-yard Guard.

† Cardinal Wolsey had dissolved the priory therewith to endow his projected colleges at Ipswich and Oxford.

* "Rosamond's Land" occurs in Abbot Islip's charter of feoffment to the king of certain lands, &c., adjoining the St. James's Hospital, 1531. Filled in and drained in 1770, the name was transferred to the pond in the north-eastern corner of the Green Park, which was filled in 1842. It was in this, of course, that Shelley's first wife put an end to her life.

† Another royal cock-pit stood at the northern end of Dartmouth-street, Westminster.

‡ See Peck's "Desiderata Curiosa," p. 68, from a MS. *penes eum.*

* Site of the Eagle Insurance Company's offices; the only free[hold] in this part of the Crown property. *A propos* of this [matter] fact may be remembered her rejoinder on finding [the] absolute freehold was not, originally, granted to her

† See *passim* Garrard's letters in the Strafford Papers, vol. i.

‡ A plot of about four acres, so-called from the mulberry trees, co-eval with Shakspeare's, which William Stallenge planted for James I. at Goring House. Hither Dryden would escort Mrs. Reeve, of Killigrew's company, to regale on the tarts. Buckingham Palace grounds cover the site.

"Sylva," the holiday-makers were driven away across the river to another garden, giving it the name of their former haunt, laid out by Sir Samuel Morland and which subsequently became Vauxhall. Amongst its last episodes of fashionable life was the quarrel between Capt. Thomas Howard and "invincible little Jermyn," —the Countess of Shrewsbury the *teterrima causa*,—resulting in a sanguinary duel between principals and seconds alike in the Fields hard by, since it constituted high misdemeanour to draw in the Park. Ere long there arise Buckingham-court, with the mews by the Rummer Tavern* and Wallingford House; the Outer and Inner Spring-gardens; and Adam Locket opens his coffee-house by a house said to have been inhabited by Cromwell, and where at this day is Drummond & Co.'s bank, founded by Andrew Drummond of the line of Strathallan, *circa* 1710, who had for clients the Scottish peers that frequented the Jacobite British Coffee-house in Cockspur-street. The allurements of the Gardens are heard of no more, whilst its traces finally disappear in the grant to Lord Berkeley to build over the "Wilderness" in the year 1772.

An examination of some plans in our possession and those in the British Museum goes to show that Spring-gardens as we now see it dates from the beginning of the eighteenth century. William III. is said to have opened the passage from Charing-cross into the Mall in 1699; though an approach here clearly appears on a plan of 1690. But the footway from the Mall up the steps to the original gate in New-street would seem to have been constructed just eighty years ago, when they pulled down part of the old wall for the circular end of the street, leaving the 150 ft. of the wall which runs evenly with the Terrace. Mermaid, Stanhope, and Pump courts were removed by 1755. Lord Berkeley's house in Outer Spring-gardens came down in 1862 for the Office of the Metropolitan Board of Works; in this thoroughfare were the Bull Head Tavern, next door to which, at one Thomson's, Milton lodged during the writing of his "Johannis Philippi Angli Defensio"; also Egerton's, where James Thomson first stayed in London with his "Winter" on his hands; and the mean lodging whereat Dr. Isaac Barrow died. Prince Rupert, Mrs. Centlivre, Philip earl of Chesterfield, and Colley Cibber contribute to the renown of this quarter. In a dingy neglected house in New-street resided the Duke and Duchess of Brunswick, parents of Queen Caroline, whose daughter, Princess Charlotte, occupied the adjacent Warwick House. In this same street lived Sir Astley Cooper, "plain John Campbell," and his father-in-law when Sir James Scarlett. Nor should we omit to speak of a very celebrated personage who had his first habitat, in 1666, by the passage into Spring-gardens, namely our old friend Punch, on whose account there occur four entries in the overseers' of St. Martin's books for sums ranging from 22s. 6d. to 52s. 6d. as "received of Punchinello, the Italian popet-player, for his booth at Charing-cross."

SUBTERRANEAN WATER AND THE SUPPORT OF BUILDINGS.

THE public have lately been startled by the violent effect upon the Severn Tunnel of the tapping of a spring or a reservoir of subterranean water, and it is easy to understand from the injury caused by the active flow of a great mass of subterranean water the proportionate harm which may be done to the land from which that water has flowed, by the abstraction of large quantities of this element. Quite recently also the same subject was considerably discussed in the case of Leighton *v.* The Royal Courts of Justice Chambers, Limited, which involved the right of certain buildings opposite to the Royal Courts of Justice to support. That case, judging from the reports which appeared in the daily journals, was decided against the plaintiff, on the ground that he had not acquired the right to support for his warehouse and machinery, so that the question of support from water became immaterial; and it may be well here to remind our readers that a person may have a right to the support of the land in its natural state, but that for the support of buildings on land he must acquire a prescriptive right. Passing, however, from this point, which we have discussed more than once in connexion with the celebrated case of Angus *v.* Dalton, it may be opportune to recite briefly, for the benefit of those who are interested in land and in buildings, the state of the law in regard to the right of support from subterranean water. The increase in the rights of the owner of land or buildings who depends for support upon his neighbour has been obvious since the case of Angus *v.* Dalton, which placed the right to lateral support on the same footing as that to vertical support. But the broad character of the law as it now stands may be apt to lead some to think that the right is more absolute than it is, and to consider they have a right to have their land or house supported in any eventuality. But there is nothing in any of the recent cases on the right of land to support, to upset, or detract from the authority of the case of Popplewell *v.* Hodkinson, which, in 1869, authoritatively decided this point by means of a decision of a very strong court in the Exchequer Chamber. Indeed, the reasoning of many of the judges goes to support indirectly a law which has of late years never been doubted. It may, in half a dozen words, therefore, be said that the right to support from subterranean water is an exception to the general rule, and if it happens that A. drains his land or pumps water from it, and by so doing draws away water which is either stored beneath his neighbour's (B.'s) land and buildings, or percolates beneath them and consequently causes a subsidence in B.'s property, he is under no liability to pay damages for what he has done. The principle was laid down in the clearest possible terms in this leading case. "Although," said Chief Justice Cockburn, "there is no doubt that a man has no right to withdraw from his neighbour the support of adjacent soil, there is nothing at common law to prevent his draining that soil if for any reason it becomes necessary or convenient for him so to do." Thus, if it becomes necessary for the purposes of building for him to drain away subterranean water, even though in so doing he damages adjoining property, he is free from any liability. In this very case the draining was done for the purpose of erecting a church in Manchester, and the buildings which were injured were adjoining cottages. It is only necessary, for "church" and "cottages," to read "chambers" and "warehouses," or other words, for this case to be applicable to almost any instance which can occur to a reader's mind.

But it should not, on the other hand, be forgotten that an exception is probably ingrafted on this main exception to the general rule of law. This exception arises when land has been granted for building purposes, and then the grantor, under the rule that a grantor cannot derogate from his grant, would not be allowed to use his land so as to injure his neighbours' property. But it is impossible to regard this as a settled legal rule, because in a more recent case in the Privy Council, Lord Penzance's judgment is in an opposite direction to that of the Exchequer Chamber in regard to this particular sub-exception, if we may so term it. It is true that in the actual case before the Privy Council, there had been only a grant of the surface, and not of the parts beneath, but on the other hand it was a derogation from the grant of a safe surface if water was abstracted so as to cause the top to descend. There is also this to be said in favour of the tendency of opinion in the Privy Council that there seems to be no reason why, if the case of subterranean water is an exception to the general rule in regard to support, equally also the same case should not be regarded as an exception to the general rule by which a man is not allowed to derogate from his own grant. In both instances the reason for the exception would seem to apply. That reason would seem to be that it is difficult to say if houses and land adjoining are in any way supported by subterranean water, and therefore that, in the case of houses at least, there is no way in which the neighbouring landowner can protect himself against the growth of a prescriptive right to support. But it is sometimes difficult to find reasons which will reconcile conflicting judgments, and it is useless to deny that the rule that land and houses have no right to support from subterranean water percolating through the soil is rather difficult to reconcile with the general rule that lands and houses (after twenty years' enjoyment) have an absolute right to vertical and adjacent support. In the case of adjacent support, in nine instances out of ten, men do not consider if their land or houses are supporting adjoining land or houses, or if they do, they do not, by digging, endeavour to prevent the accretion of a prescriptive right. Neither do they know, or attempt to know, if there is a spring flowing beneath adjoining premises. But the exception to the general rule being as it is, only the Legislature or the highest Court of Appeal can alter it.

* According to a plan of 1734 Rummer-court lies between Buckingham-court and Cromwell's house (Biddulph's Bank).

A SQUIRE-ARCHITECT.

STRAYING idly through the peaceful valleys of a Midland county on a perfect day in the pleasant month of October, noting the thatch-covered cottages, their whitewashed walls covered with trellises of climbing roses, and their patches of garden ground bright with dahlias, lighted into vivid beauty by the declining rays of an autumn sun, I came unaware upon a village whose modest houses bore here and there, as I thought, the marks of a well-known architect's hand. The church-door was open, and I entered. Remnants of the decorations of a harvest thanksgiving were being removed, and I could see, in the metalwork and other fittings of the sacred edifice, some characteristics which confirmed my surmise as to their authorship. A new vestry had been recently built, the chancel had been repaired, and a really handsome and costly floor had been laid. It was quite evident that the church was well cared for, and that the Apostolic precept to do all things decently and in order was scrupulously observed.

A prodigious elm stood in the centre of the village, and under its branches the smithy nestled picturesquely. Over a small newly-built shop adjoining were written the words, "Happyton Co-operative Stores."

"Are these *really* co-operative stores?" I asked, "or have you only adopted the title to attract customers?"

"No, sir! They are conducted on the co-operative principle; that is, purchasers all pay ready money, and receive at the end of the year a dividend according to their outlay."

"Who manages the affair?"

"Oh! the gentlefolks up at the House. They have set them going, and they look after them."

"That is a Well, I suppose, which I see on the green, enclosed and covered by a tiled roof?"

"Yes, sir; that was dug by the same gentleman, 150 ft. down into the chalk. Before that, Happyton had no water at all,—at least, only what was caught in the garden wells, which got very foul with the soakage. Now there ain't better water nowhere round, and there is always plenty of it."

"Did he also enlarge the schools which I passed just now?"

"Yes, sir, he did. This was a very different place before he took it in hand."

"What is that building opposite?"

"That is the Public Reading-room."

"Built by the same person?"

"Yes, sir."

"He seems to do everything!"

"Well, sir! he *do* do a great deal."

"In what sense is it public? Can I go in?"

"Oh dear, yes, sir, and welcome. You'll find *everything* there."

This sounded encouraging, and I entered through a honeysuckle-festooned porch into a moderate-sized room,—something like a village school, only it had a large alcove along one side furnished with fixed seats under a long low window, which looked out upon a pretty strip of garden. The room was filled with chairs packed pretty tightly in rows. I rang a hand-bell which I found upon a chair, and was answered by a young woman, good-looking, in every sense clean, well (that is appropriately) dressed, and the pink of courtesy. There was a card, on which I read, on entering:—"Tea, Coffee, Lemonade, &c.," and the *et cetera* lent a sort of colour to the statement of my informant that "everything" was here to be found.

I decide on coffee out of the possible variety of refreshments, and while it is being prepared I examine the room. Only one person at present enjoying these opportunities! Happyton still in the fields, I suppose, hard at work.

The first thing that strikes one is that the room is thoroughly well built and finished. Pitch pine joinery, painted walls, good comfort-

able seats, and a magnificent fireplace,—lined with tiles and almost capacious enough to hold all Happyton on winter evenings. It was designed for burning wood on its broad hearth, and it bore aloft the legend "WISE MEN LAY UP KNOWLEDGE."

And means for laying up knowledge were at hand in the shape of newspapers, books, and periodicals. On the walls were cases of birds and such like, their names and habitats duly set forth, and other aids to the satisfaction of the inquisitive. About one third of the room was shut off by some maroon drapery tastefully arranged,—and a card announced that "this evening" (lucky wanderer!) there would be an entertainment consisting of pastoral songs, &c., sung in costume. Here comes the coffee,—deliciously hot and fragrant,—accompanied by wholesome bread and genuine unsophisticated butter, a plentiful allowance of sugar and of milk above all suspicion.

"Who are to be the entertainers to-night,—may I ask?"

"The young ladies and gentlemen from 'the House,' sir."

"May any one come?"

"Well, sir! all the tickets have been sent for long ago, but you might be able to find room."

Leisurely and with much satisfaction I discuss the cheering cup and its accompaniments—glancing the while at the papers about the room, and envying the bliss of these obscure villagers. The Happytonian who was enjoying his solitary paper is shy and goes out. The tinkle of the forge under the great elm is just, and only just, heard, and the whole scene is one of perfect serenity and peace.

If there is a fault about the institution it is that the seats and all the surroundings are too seductive; and if Happyton in a body should "refuse to labour more" and take to dozing away its existence in this blessed retreat, I for one should say that in presence of such strong temptation the fault was venial.

Enter some of the young ladies,—apparently to rehearse. They are startled to find a stranger present at this time of day, and so I depart. The charge for my repast is—twopence! Think of that, ye City clerks who fill the *Daily News* with your unsatisfied yearnings after cheap dinners.

Clearly I must spend the night in this happy valley, to which chance has led me, and assist at the promised entertainment. It begins early, and I pass the short interval in prospecting, leaning over field-gates and watching the "glimmering landscape fade upon the sight."

The room is very early filled with an orderly and expectant audience, and I managed to squeeze myself into a corner. The stage has been decorated by the lady of "the House" with palms, and ferns, and flowers from her own conservatory. The curtain is drawn aside, and discloses a sylvan scene with shepherds and shepherdesses à la Watteau, Damon and Phyllis, and Daphne and Chloe, attired in the most ravishing of costumes, with silver crooks garlanded with real flowers.

They sing old English songs and glees, and madrigals, and a few light French chansonnettes with perfect simplicity and grace, to the manifest delight of all present. Part of Happyton failed to obtain admittance, and the entertainment is to be repeated the following evening for their behoof.

With a little speech from the vicar, the proceedings terminate before nine o'clock, for late hours are not in favour here, and we step out into the night,—

> "Blue and starry and cold,
> Silver mists in the gray twilight
> Over the level wold."

Up betimes, I make a further survey of the village and explore its beauties, and amongst other things occupy a careless hour or two in making the accompanying pictorial memoranda of its church, club, and other points of interest.

"The House" is gloriously situated upon an eminence overlooking the whole neighbourhood. The road to it winds its way through beechen glades and groves of fir, past keepers' lodges with their rows of bee-hives already protected from the winter's cold, until we reach a plateau from which nearly the whole distant horizon is visible and we can see into I know not how many counties. A civil request brings prompt permission to look around and to make the rough sketch here given. The interior was also courteously shown, but that is sacred. Those who can guess the name of its owner will readily believe it to be filled with all manner of delights, and that the old English virtue of hospitality was not wanting. Hither comes, as he can snatch the time, one of the most successful architects of the day. iBusy with an amount of business which might tax the endurance of a Prime Minister, he recruits his strength in this delightful retreat, shoulders his gun for a day in his own stubbles, or directs in person the operations of his model farm.

Threading my way homewards through the village, I heard many tales of his philanthropic interest in the welfare of the dwellers therein. He knows them all, and they know him. For each and all he has a kind word,—which costs nothing,—and for their convenience he has inaugurated and carried out good works, which have cost a great deal. I might have listened long to an account of his many acts of not unremembered kindness. But the day is drawing to a close, clouds of rooks darken the air as they return gossipping from their daily work in the fallows. The mists are again rising in the valleys,—the robin peeps wistfully about, and the patter of the falling chestnuts breaks the

> "Soft silence of the listening night."

I turn my face once more towards the Great City, and as I look regretfully back to the village, its smoke curling pale and blue against the dark foliage which girdles in "the House," I feel that it is something to belong to the profession which can claim as its own the Lord of the Manor of Happyton.

CONTINENTAL NOTES.

No sooner were our Law Courts once more open, after the repose of the Long Vacation, than we had to listen to fresh, and this time certainly not unreasonable, complaints against Mr. Street's great building in Fleet-street. If companionship in suffering can offer any consolation, frequenters of the Law Courts may perhaps derive some satisfaction on hearing that the colossal Palais de Justice lately opened at Brussels is also far from meeting with the approbation of the legal fraternity and their clients, now that the admiration for the imposing exterior has cooled down and the courts have commenced their sittings. The rooms, it seems, like our own, are complained of as dark, and the network of staircases most confusing. An old lawyer writes to the Brussels papers stating that in passing from one court to another he has to ascend and descend no fewer than 276 steps; this is certainly trying. Such are the necessities of an imposing exterior. Perhaps the critic was not so far wrong who spoke of creations like M. Poelaert's Palais de Justice as belonging to the "elephancy" of art.

M. Edmond About, with his felicitous touch, has been recently describing, in the pages of the *XIXe. Siècle*, a tour to Constantinople and back by the aid of the newly-established direct route in Pullman's ubiquitous cars; but it requires all the accomplished writer's graceful powers to rob the hurried journey over such picturesque ground of its objectionable elements. *En route* M. About visited the new palace of the King of Roumania, at Sinaia, the completion of which was briefly referred to in these pages three weeks since.* The palace, perched 1,800 ft. above the Danube, is, after ten years' delay, at length ready to receive its royal hosts. M. About describes the palace as a modern fairy creation, a puzzle of learned archæology, of rare marbles, wood-carving, and metal-work. The decoration generally is spoken of as being of a taste "perhaps more original than classic," but most effective; in some cases an "orgy of wood-carving," several of the rooms being literally decorated from ceiling to floor "like a Renaissance cabinet." Windows open in every direction on to the exquisite views, the dashing torrents, and the vast forests which lie stretched at the foot of the palace. The concert-hall is described as magnificent in its decorative effect, rivalling in richness the state apartments, while the dining-room M. About characterises as "monumental."

While thus one palace of modern creation rises in the distant wilds of the border-land between the east and the west, we hear of the destruction by fire of one of the historic castles of Poland, the château of Sienava belonging to the Prince Czartoryski. The château was built early in the last century from the designs of Mansart, numerous costly additions by the late Viollet-le-Duc having been recently made, and not even yet completed. Art-lovers to whom the Czartoryski collections are well known will be pleased to hear that no works of art have been destroyed.

The Prince's Gallery is divided between London and Paris, and almost opposite the windows of his pleasant home on the banks of the Seine, the new Hôtel de Ville is rapidly approaching completion. The *employés* are already installed in the left wing, where, however, their labours have been pursued amidst all the bustle and mess of carpenters, upholsterers, painters, and decorators generally. As for the right wing, though externally it is completed, the whole interior remains to be fitted and furnished. The line of marble columns which support the vaulting of the vestibule leading to the prefect's apartments are at present in the hands of the polishers, while the transparent flooring is being laid which is to cover the inner courtyard from which access is afforded to every portion of the building. This inner courtyard promises to be as successful a feature as flower-beds and shrubbery can render it; something, in fact, like a reminiscence of the hanging gardens of Nineveh appears to be aimed at in this skilful collaboration of the gardener and the architect, or the effective introduction of greenery which all who know Rome may remember gives such a charm to the new Post-office.

In the mean time, while the Paris Hôtel de Ville is making accommodation for the civil necessities of the metropolis the stern logic of statistics tends to show that the Paris population, so far from increasing, has been within the last three years steadily decreasing, and the building mania appears to have reached its term, notwithstanding which fact we hear that in the first fortnight of September no fewer than sixty-nine building "authorisations" were issued by the authorities, representing a total of some 250 floors or "flats." Preparations have been made within recent years in Paris to house about 80,000 additional inhabitants annually, and now it is discovered that the population is diminishing. Speculation in real estate has been busy of late on the banks of the Seine, but fortunately without any of those concomitants of jerry building to which we are too accustomed on our side of the Channel in this species of commercial investment. In spite of the growing value of land on both banks of the Seine, and the continued demand on the part of a certain class of tenants for more luxurious accommodation, we learn that speculators have been comfortably making their 5 to 8 per cent. by the five-story stone-built *maisons de rapport* which are rising throughout Paris in every direction. The insurance companies have recently set an excellent example in investing their funds in this safe manner. At the same time there is a universal complaint in Paris, as in London, of a want of cheap accommodation, though the standards of rent singularly vary in each case. Much, however, is being done to satisfy these claims. We heard lately of a block erected in the new *quartier* Clignancourt, covering an area of about 25,000 square yards, on which have been built 100 houses (of the regular Paris type), able to accommodate something like 10,000 persons. This may be said to be approaching one ideal of civilisation, the skilful and healthful packing of a vast number of human beings, all within comfortable distance, not alone of their business and educational requirements, but of their equally requisite pleasures. None the less Paris has no more solved than ourselves the question of adequately housing the poor. Only very recently a motion was laid on the table of the French Chambers urging that special powers be given to the inspectors of unhealthy dwellings to directly question improperly-lodged tenants, a right so far denied to the authorities. Before leaving the question of building in Paris, we may mention that at a recent meeting of the Fédération des Ouvriers du Bâtiment de France it was decided to send three delegates of the association to the forthcoming Boston Exhibition, to represent there the very numerous interests of the French building and allied trades.

To fill the vacancy among the Foreign Associates of the French Academy of Fine Arts, caused by the death of the late lamented Viennese architect, Prof. von. Ferstel, Señor

* See p. 548, *ante*.

Da Silva, a well-known Lisbon architect, has been elected. All lovers of art will also learn with pleasure that Paolo Mercurj, the Roman engraver, has been called upon to replace as Foreign Associate the late Herr Felsing, of Darmstadt.

The annual meeting of the French Academy of Fine Arts is one of the great solemnities of the Paris season; this year the distribution of prizes was presided over by M. Gounod, whose earnest words to the young pupils were received with more than usual interest, coming from so justly revered a source. In spite of his sixty-five years the composer still possesses all the warmth of youthful ardour, and much do we hope both young and old will take to heart the earnest words of the great musician. He need, however, have none of the fears he expressed that his views might be regarded as "old fogey" when he urges that there is no such thing as "modern" art, it is merely the art of the past, followed under different conditions. When we hear so much as we do in the present day about realism and its aims, with which many students are so apt to be fascinated, M. Gounod's is the voice of that minority which Mr. Matthew Arnold has recently told our American cousins has at all times saved the majority from the results of their own inevitable rashness. Nor can M. Gounod be too highly praised for urging on the young artist in the present day the value of conviction, ever guided by the dictates of truth, the inspiring motive of all eloquence and of all true art. Against the current of that realism for which the veteran academician expresses his detestation, he would urge the continual necessity for study, the study of Greek art, the Old Testament of the worship of external beauty. Warm words were those of the composer of "Faust," on the vanity of fame and its train of enmities, and warmer still his reiteration of the ever-sustaining value of truth as the duty the artist owed to society, and as the ideal which should ever inspire him in his creations.

The statue to Alexandre Dumas, unveiled on the 4th inst., on the Place Malesherbes at Paris, was, it will be admitted, only a just tribute to the memory of the popular author of "Monte Christo." Poor Gustave Doré has not lived to see his work completed, but he will none the less share in the honour done to the industrious novelist, who died but thirteen short years ago. The Paris press of late has, of course, been re-telling the incidents of the singular life of the writer, who is as great a favourite in England as in his own country. At Lady Holland's receptions, arm in arm with Count D'Orsay in those bygone days of London "Society," Dumas, it may be remembered by old Londoners, was for one season a "lion." The French delight far more freely than we to honour their famous men, and this tribute to Dumas,—not a statue to be huddled away in some dingy square, never to be seen, but conspicuously placed in one of the choicest *quartiers* of Paris,—is but justice done to an author who has helped so largely to bring before the world the peculiar interest which centres in the city on the banks of the Seine. It is for this reason that we approve of the project, now fairly set on foot, of erecting a statue to Balzac, a no less typical Parisian and typical French artist.

THE ARCHITECTURAL ASSOCIATION.

The first ordinary meeting of Session 1883-84 of the Architectural Association was held on the 9th inst., at No. 9, Conduit-street, Mr. Cole A. Adams, President, in the chair.

Mr. James Morton Townsend, Mr. A. C. Couldery, and Mr. Basil A. Slade, were elected members.

Upon the motion of the President, it was resolved:—

"That the Architectural Association desires to place on record its feeling of indebtedness to the late Bowes A. Paice and Richard C. Page for much good service, marked by courtesy and consideration, rendered by them in the past; and its sense of the loss to the profession of two men of such ability, cut off before they had opportunities of permanently showing their talent; and it tenders its respectful sympathy to the relatives of those gentlemen; and, further, that a copy of this resolution be sent by the hon. sec. to the friends of each of them."

The annual report and balance-sheet, together with the reports of the classes, which are contained in the Brown Book, were taken as read, and, on the motion of Mr. J. Douglass Mathews, seconded by Mr. Stannus, were adopted. The balance-sheet shows a total income of 941*l.* 9s. 10d. (including a balance of 128*l.* 18s. 10d. brought forward last year), and a total expenditure of 724*l.* 13s. 3d., leaving a balance of 216*l.* 16s. 7d. in hand.

The President then proceeded to deliver his inaugural address. He commenced by reviewing the work of the Association, paying at the outset a warm tribute of gratitude to the honorary secretaries for the zeal, courtesy, and ability with which they voluntarily discharged the onerous duties of their office. The growth of the Association had, indeed, so added to the labour of carrying on the work of it, that, in the President's opinion, the time must shortly come when paid assistance would have to be resorted to to do such routine work as could be taken off the shoulders of the honorary secretaries. Taking the list of members from the last edition of the "Brown Book," it would be seen that 786 were resident in London and 174 elsewhere, making a total of 960. From statistics furnished him by the gentlemen acting as secretaries to the classes and lectures, he had ascertained that last session 190 members or thereabouts (including country members) availed themselves of the advantages offered by the classes and lectures, or about one-fifth of the entire number on the list. An analysis of the lists showed that, out of these, two members attended five classes and lectures, six attended four, nineteen attended three, and forty-one attended two. After making a fair deduction for members who were in practice and for those who had in previous years passed through the classes, he hardly thought these results were as satisfactory as they ought to be. Looking through the statistics given in the "Brown Book" he found that "Design" numbered 479 attendances; "Construction" 784, as against one previous session, when "Design" scored 711, or 232 more attendances, and "Construction" 763, or 21 less than last session. Thus for the past session "Construction" was 305 ahead of "Design," as against 52 the session before,—a majority six times larger.

No one, continued the President, will grudge "Construction" such very satisfactory results. The importance of science in relation to architecture no one will dispute; and those who have the management of the classes and lectures devoted to this branch are to be heartily congratulated, and we can only hope that this present session will swell the numbers still more. Why is it, however, that "Design" falls so far below the standard of the former session, and, I fear, far below previous ones, if the statistics were worked out? It is a question which we ought to face seriously. That the science of construction should claim the attention of more students than the art of design need surprise no one, I think, inasmuch as most minds are attracted to what can be demonstrated and proved,—science accepting nothing on faith; and with ordinary ability, coupled with perseverance, the principles and practice of construction may be mastered without much difficulty, though to succeed in the higher branches requires, of course, a higher order of intellect. The faculty of design is, as will be generally conceded, a much rarer gift, without which a man cannot be an architect in the true sense of the term. He may be able to raise a building fulfilling every condition of sound construction, but destitute of every quality which pleases the cultivated eye. Design not only demands the inventive faculty, but also the higher gift of imagination and the qualities of the poet and artist, and such gifts are rare.

If you admit this brief definition to be a correct one, we are still brought face to face with the problem, Why has our society so fallen in its "art" results this past session? A review of the progress of art generally, throughout all its branches, does not to my mind give a solution of it. The progress in architecture, sculpture, painting, and the decorative arts during the last quarter of a century has been great, and in our own art especially so. I think perhaps one,—if not the chief,—cause of the falling-off we are now considering, is due to the rather chaotic and transitional state which is now existing in the school of thought as applied to architecture. The great Gothic wave has spent itself, and though we have works and men of whom we may be justly proud, we cannot, enthusiasts though we may be for our first love, say that she claims the devotedness which characterised our admiration of a few years back; and pursuing the metaphor, the heart has grown cold in many, and nothing has yet risen up to fill the void. History is again, in Gothic art, repeating itself. Our masters of the revival preached that the only salvation was in the pursuit of the earlier, and, as they thought, purer styles of the Christian art; and in these latter days a school has arisen which forsakes that teaching and preaches that the better art is in the later styles, and in the "flat and pointed." Others worship at the Jacobean shrine, make votive offerings at the tomb of Queen Anne, find even something to admire in Georgian relics, until maybe the student shall wander into Gower-street, sketch-book in hand, and there, let us hope, stop. Is such work followed with a tithe of the enthusiasm and love with which Gothic was? Is it a style from which the student of to-day can start on his career, feeling that he has found the truth, and, girding up his loins, through good and evil report follow in its path? I do not think so; and to the present unsettled state of our art I trace the coldness which has fallen upon the members of this society of late years, paralysing what should be the highest aim of its existence,—nobility of design. I take it another cause may be a too great tendency to thoughtless study of ancient work. I mean by that that students think the one great aim is to fill their books with pretty sketches, jotted down because they took the fancy of the moment. This is very much like dipping into a book and indulging in desultory reading, picking out the light and amusing parts, but missing the author's teaching; skipping the chapters which imparted the great lessons the author had to teach. Depend upon it, if you want the secret of success which has produced the works of great architects you must seek it in a different fashion to the one too usually adopted. How can enthusiasm be once more kindled in this Association? I hardly know. What would be the best course to adopt in teaching design? To this I would venture to say, let us in our classes commence with teaching those styles of architecture which, by a general concensus of authoritative teaching, are recognised as the *classics* of art, and, taking one of these styles in a session, let the student devote his whole energies to obtaining something more than a smattering of it. Looking at the syllabus for 1883-84 of the Elementary Class of Design, is it not rather appalling? Designs in eight styles, to be worked out in so many months. Is this the best system we can adopt? Would it not be wiser to take one of them, and learn its grammar with a little more thoroughness, so that, being well grounded in the grammar of architecture, we may, at least, compose in language which shall be intelligible and appeal to cultivated minds?

One thing is clear, if we will only look at it steadily, and that is that the architect of the future must be much better educated and trained for his duties than he is at present. The whole scale of acquirements considered necessary for the fight of life has so risen that, to hold any position at all, a man must be above his fellows, above the average scale. Mr. Aston Webb, in his presidential address,* foreshadowed the time when we should possess an institution for the proper and more systematic education of the young men for the profession of architecture; and though that day is distant, I believe it will come, and if we had more *esprit de corps*, more unity, more belief in the greatness of our art, we could hasten that day, and not let the century close without leaving behind us a college devoted to the teaching of architecture. But you must not wait for that: take what you can get, and see that you make good use of it. You have the Association: join the classes, and do so now, attend the lectures, take off your kid gloves and coats, and,—work. Never mind about clean paper and pretty sketches to show your friends, but bend your minds to a close study of parts on the principles I have suggested. A thorough acquaintance with mechanics is necessary, and in the reach of all; and if you will make them, opportunities for the study of works in progress are at hand. All of you have some leisure; you must make up your minds in these days to give up a great deal of that to your work.

If any aim at following the profession in its highest branches, it behoves them not only to master the art and science of their profession,

* *Builder*, vol. xli., pp. 568, 627.

but to fit themselves for the society of the men they must be thrown amongst. An architect in good practice will be called upon to mix with men of the highest refinement and culture, and to hold his own in society it is necessary that he be fitted for it. I note with satisfaction the entrance into the profession of more men from the universities. Such a training should give them an immense advantage in their intercourse with the world, and on social grounds also. The architect of the future will have to pursue the study of many things which, at the present time, he has not devoted so much attention to as he ought. A thorough knowledge of the principles and practice of sanitary science is simply indispensable, unless you are disposed to see this work drift into the hands of the outside specialist, and be looked upon by your clients as simply designers, who cannot be trusted with matters affecting the health of the people you build for. Is it wise to let a class of work of such paramount importance as life-saving go out of your hands? Then a knowledge of iron construction, building in concrete, electricity, warming, and ventilation will become more and more essential. Engineers recognise this, and it seems to be looked upon as their peculiar province to deal with whatever modern science has added to our list of important building materials and appliances for modern building. Many architects, wedded to the old forms of construction, seem to think it derogatory to their art to expend any time or thought upon new materials, &c., and the science of using them; of course, if we do not the engineers will, and so little by little the field of architecture will be invaded still more, and the reproach of not being practical and up to the requirements of modern times will not be unmerited. An intelligent study of the architecture of past times teaches how endless is the combination of materials, forms, and modes of construction; the old builders appropriated always what came most readily to hand. Follow on those lines, and you will no longer neglect to use those means which modern discovery has placed ready to our use. We must use them, however, intelligently, and not be ever striving, in our love for what is old, to try and make the new materials represent what is foreign to their nature. We must endeavour to get rid of this eternal plagiarism and imitation, which is the curse of so much modern design.

I have given a long list of requirements, but I challenge any one who has given thought to the subject to say whether it is an exaggerated one. It certainly is enough to make the thinking student pause and ask himself whether, if to accomplish so much is necessary, he is strong enough for the fight. Look well to it now. Unless you are strong in your determination to do this, you had better give it up, or you must be content to count only among the rank and file; a leader you can never be. To be a leader will require all your best energies, unflagging zeal, and a natural bent for your profession, together with that indispensable accompaniment for a life of work and hardship, a strong constitution; and you must make up your mind to endure many hardships and disappointments. Better face this at the outset.

I cannot help thinking that the tendency of modern times will, as I endeavoured to show in a paper that I had the honour of reading here some time back,* be to create a class of specialists in our profession, and in collaboration; the latter view the late Mr. Page held very strongly. Take sanitary science, for example. We architects neglected it; a class of sanitary engineers arose, and have taken a great deal of such work out of our hands. Had we not better try and get it back again? An architect should be better able to do such work, in so far as it relates to architecture, than an engineer; and there is, as far as I can see, no reason why he should not. Here is an opening for special study and profitable practice. A man who has made a speciality of sanitary science may collaborate with a brother professional who cannot, perhaps, give his attention and time to a subject demanding so much thought and care. Colour-decoration, again, demands special study, and an architect in large practice frequently finds that he cannot, if he would, give to it all that is demanded, and so the painter and decorator is called in, who, unskilled in architecture, applies his decoration on no defined principles, and too often spoils a fine work by unintelligent use of colour. Is there not a field here for the specialist to collaborate with his brother architect? Numerous other ways in which this principle could be brought to work will occur to you; time will only permit me to suggest them here.

When acting as president of the Class of Design, I was struck with much of the draughtsmanship which I saw. I can only use one word to describe it,—it was *slovenly*. There was too much attempt at picturesqueness, and that at the sacrifice of good line and accurate delineation. Designs for new buildings were drawn in the roughest manner, coloured like a sketch of an old building, and the lines of the roof, &c., positively drawn irregularly, so as to give the building the appearance of being old and weather-beaten. Surely this is an error. Would not such drawings puzzle the clerk of works or foreman when he reads in the specification, "No deviation of any kind is to be allowed from the drawings"?

I am tempted by recent remarks in the press, and circumstances which have come under my own notice, to refer to an ugly charge frequently made against us, and broadcast; one which makes the blood tingle in the veins of honest men. I mean that of taking commissions from others than the clients. It is said that the custom prevails largely amongst architects. I do not believe it. That it does exist to some extent is, I fear, too true. The temptation is a strong one, and so insidious that no great surprise need be felt that some men give way to it, and thereby swell their incomes. We have in our ranks young men in their articles, others acting as assistants, and some who are starting in practice, and I would fain, for their sake, raise a warning voice against this cancer, which, when once it has fastened on the system, grows and sends its poisonous fangs in all directions until all that is best and noblest in a man's nature gives way to it. Most of us who have had any experience of a professional life know that some tradesmen, in their desire to secure custom, offer the most advantageous terms to architects as a bait. It must only be met in one way, and that is absolutely to decline receiving payment in any form whatever except from your employer. Once pocket the bribe and you lose self-respect; you have accepted hush-money, and you become the servant of the briber. In electing to follow the profession of architecture you have chosen one which, with fair success and hard work, will give you a moderate income,—very rarely a large one,—but do not seek to swell it by illicit gains. You belong to the oldest and noblest of the arts, for she is the mother of them all; then, as true sons, refuse to bring discredit on her. If this evil does exist to any extent among architects,—and I repeat I believe it is a libellous and untruthful statement,—any words of warning that I may raise may not be without value to those who will be sure to have the temptation, sooner or later, thrust upon them.

In conclusion, the President reminded his hearers that in the Association they had advantages which were unknown to their predecessors, and it therefore behoved them to avail themselves to the full of their opportunities, remembering that the success of the Association and its usefulness to themselves and others depended upon every individual member no less than upon its office bearers.

Mr. J. Douglass Mathews, in proposing a vote of thanks to the President for his address, trusted that all the members would make use of the advantages offered by the Association. In regard to the losses by death which they had to deplore, he knew both Mr. Page and Mr. Paice well, and more estimable gentlemen never existed; they were earnest, painstaking, and conscientious. He thoroughly agreed with the remarks in the address as to specialists in the profession, and thought the time had come when it was desirable specialists should exist.

Mr. E. J. Tarver, as a past-President of the Association, had much pleasure in seconding the vote of thanks. He quite sympathised with the remarks made in that portion of the address which referred to the hurrying through of subjects which were treated in some of the classes. He thought that in a future session, if it could be arranged in the Elementary Class of Design that each style should spread over two or three lectures, it would be an advantage. He was somewhat at issue with the President as to the view he had taken of modern architecture, and contended that much of their domestic architecture was now essentially modern, and that they only awaited a similar development of ecclesiastical architecture in order to possess an English nineteenth-century style. In support of this proposition he said that they became day by day less archæological and more practical, as witness the Board Schools, the newly-built cistern tower close to Newgate, the Raikes Memorial in Essex-street, Strand, and some recently-constructed and quietly-designed private houses, all of which, he said, were essentially modern work. It was, of course, most necessary to study old work, not in order to base our practice on this or that particular style, but in order to get behind the style and to arrive at the reason of this or that particular feature in any style; not to say merely that Cinque-Cento glass is "out of style" in a lancet window, but that a narrow window requires a self-contained treatment, different from a broad one such as the east window of St. Margaret's, Westminster. Church restoration had probably been the drag upon advance in ecclesiastical architecture, for architects had not had the courage to make their work as different from the old styles as these were from each other. He considered that restoration, for its own sake, was surely a mistake; for instance, the proposal to pull down the store-house at the Tower of London in order to replace it by a copy of an ancient building. The result of this system of restoration was that the Society for the Protection of Ancient Buildings wildly urged us to prop up rather than rebuild, and recommended extremely plain props, whereas we found, from straining arches and flying buttresses, how beautifully props might be treated. He mentioned, *en passant*, Phiz's drawings of David Copperfield's wedding and the sermon, which showed church interiors that would be dear to the hearts of the Society, and he recommended a visit to the Exhibition of Phiz's Drawings at the Fine Art Society's Gallery, the artist (Hablot K. Browne) having been thoroughly acquainted with Mediæval architecture, his name being at the foot of several plates in Winkle's "Cathedrals." To return to his argument, he said we knew that several eminent church architects were practising in a more modern fashion (the "They-all-do-it" style). Twenty years ago the cry among such men was, "One style for all buildings; Gothic is right for churches, and therefore for houses." They merely waited for these gentlemen to be *consistent*, and to show them that what was right for houses is therefore right for churches, and then *all* would be modern. Q. E. D.

Mr. G. H. Blagrove said that the Queen Anne revival had the merit of having introduced the free use of bricks to the neglect of the compo treatment. It had also directed the attention of architects to the use of colour in the treatment of the exterior of buildings.

Mr. Stannus thought that in regard to the new style the question would resolve itself into the "survival of the fittest." He was glad that reference had been made in the address to the question of sanitation, because there was a feeling among some architects that sanitary matters should be ignored altogether. There was a class of men called sanitary experts who were taking away the business of architects in this respect. He thought that, following the example of Mr. George Godwin, who had established a Bursary in another place, they might at some future time pay more attention to the important subject of sanitation, and have a class specially for its study. He was glad to notice that among the papers to be read during the session was one on "Water Supply to Country Houses and Isolated Public Buildings," the subject being one of great importance at the present time.

Mr. Aston Webb was glad that in the address special stress had been laid upon the value and importance of sanitary matters, but he believed that in the present day architects generally were fully alive to the importance of the subject.

Mr. W. H. A. Berry, in alluding to the loss of the two members, referred to the valuable work which had been done by Mr. Page in the interests of the Association.

Mr. J. A. Gotch said that the address had one valuable merit, for it set them thinking of the great principles of their profession and of their art. The picture drawn of the life of the young architect of the present day was a formidable one, but he urged that, while devoting their time to the profession, the necessity of relaxation should not be ignored. But relaxation they

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* "Barnacles." See *Builder*, vol. xli., p. 750.

could often find in change of occupation. If they applied nearly the whole of the day to the routine work of the profession they could devote their leisure to its more pleasing or artistic sides, say, for instance, to the study of coloured decoration. He urged the establishment for young architects of a college similar to one that existed at Zurich for members of their profession.

The vote of thanks having been carried by acclamation,

The President, in reply, alluded to the remarks of Mr. Stannus, and stated that he had always been an advocate for the study of sanitation. In regard to the paper on "Water Supply," the author, Mr. W. E. Rich, was a member of the well-known firm of Easton & Anderson, and thoroughly conversant with the subject, which, as had been said, was one of the greatest importance.

ST. MATTHEW'S, FRIDAY STREET.

After the Great Fire of London two of the Cheapside churches were not rebuilt. They were St. Peter's, of whose graveyard a small portion, overshadowed by the famous tree, remains at the corner of Wood-street, and St. Michael's-le-Querne, rebuilt in the year 1430, to the west of the Old Cross in West Chepe, where Sir Robert Peel's statue now stands. The two parishes were respectively united with those of St. Matthew's, Friday-street, and St. Vedast's, Foster-lane, of which the churches were both reconstructed by Wren. Next to St. Antholin's, Budge-row, which was wantonly pulled down about ten years since, St. Vedast's has the most beautiful of the minor stone steeples of Wren's rapidly-diminishing City churches, whilst the tower of St. Matthew's (75 ft. high) is plain, of brick, in three stages; there are some authorities, indeed, who deny it to be the handiwork of the great master at all.

Stow derives the name of Friday-street from the fishmongers who lived here, and provided fish for that weekly fast-day. However this may be, we have an interesting record of the street in the evidence given by Chaucer in his fortieth year (1368), respecting the first appearance on a sign here of the now historic *azure* a bend *or*,—"painted and put there by a knight of the county of Chester, called Sir Richard Grosvenor." * Here too at the close of the seventeenth century were held the conferences which, under the direction of William Paterson, led to the establishment of the Bank of England. The old red brick house, with a sign of the Swan let into its wall, at the north-eastern corner of Friday-street, occupies the site of the old Nag's Head Tavern, pretended scene of Matthew Parker's consecration to Canterbury, of which the original sign forms a prominent object in La Serre's view of the "Entrée Royale de la Reyne Mère du Roi, 1638."

Just forty-six years before Chaucer was examined as to his recollection of this street we have mention,—and it would seem to be the earliest,—of St. Matthew's in the matter of its patronage, which then vested in the abbot and chapter of West Minster. King Henry VIII. gave the living to the bishop of that diocese, but his successor, dissolving the see of Westminster, bestowed the living upon the Bishop of London, with whom it has since remained alternately with the Duke of Buccleuch, patron of St. Peter's in the Chepe.

In pursuance of the scheme for uniting St. Matthew's with St. Vedast's, the materials of the former church, built in 1685 at a cost of nearly 2,400*l.*, were sold by tender on the 22nd of October last. The fabric, it is true, presents no very striking features, owing, perhaps, to the retirement of its situation, or to the haste with which it was erected. The most conspicuous portion is the eastern end, of stone, consisting of six lofty round-headed windows placed upon a high stylobate, and surmounted by a bold cornice and fine massive balustrade, this last-named being an adjunct for which, as is well known, Wren had no great love. The body of the church is like to the tower, of brick, and has a plain flat ceiling, slightly coved at the sides. It is about 60 ft. long by a width (30 ft.) equal to half the length. The interior calls for little remark, though the altar-piece and railings,—the gift of James Smyth, in 1685, are good examples of carving; and a large monument was set up here to Sir E. Clark, knight, Lord Mayor in 1690. Sir Hugh Myddelton is said to have served in the parish as churchwarden, whilst the registers contain many entries relating to members of his family. It is understood that the Ecclesiastical Commissioners have made grants for the removal of certain unclaimed monuments and memorials to St. Vedast's, and that re-interments have been provided for in the city cemetery at Ilford.

* *Vide* the *Scrope and Grosvenor Roll*, i., 178.

OBITUARY.

The Late Mr. John Lessels, Architect, Edinburgh.—This gentleman, who had achieved a marked position as a local architect, died in his residence, Heriot-row, Edinburgh, on the 12th instant, at the age of seventy-four years. Mr. Lessels was a native of Kirkcaldy, where he received the rudiments of his education in the school which was taught successively by two of the most remarkable men of the period,—Edward Irving and Thomas Carlyle. At an early age he showed a predilection for drawing, and desired to be a painter. His father, however, preferred that he should be trained as an architect, and he entered the office of the late Mr. Burn. In due course Mr. Lessels became a clerk of works, and acquired thereby that practical knowledge which was of the utmost value to him in his future career, and gained him the confidence of his clients when he started as an architect in 1846. On the passing of the Edinburgh Improvement Act he was singled out to act in conjunction with the late Mr. David Cousins in carrying out the provisions of the Act. His recommendations were always characterised by practical good sense, but he had withal an eye to the æsthetic bearings of the matter, considering it true economy that the *dulce* should be combined with the *utile*; and it is generally conceded that the works carried out under his supervision are worthy of commendation in both respects. It was in his rendering of the Scottish Baronial style that Mr. Lessels was most successful, and in the immediate vicinity of Edinburgh are two noteworthy examples in different phases of that style, the mansion houses of St. Leonard's and Salisbury-green. The Palace Hotel, Princes-street, Edinburgh, the most important street frontage which he designed, is a pleasing example of the manner in which he interpreted the Renaissance; and the Smith Institute at Stirling shows his adaptation of classical features to the requirements of a fine-art gallery. Mr. Lessels retained his early predilection for painting, and delighted in depicting the picturesque interiors which came under his view during his frequent visits to the Continent. As a member of the Architectural Association Mr. Lessels did good service and materially assisted in carrying-out the recent exhibition of architectural drawings in Edinburgh.

Mr. S. Pountney Smith, architect, of Shrewsbury, died on the 5th inst., in his 72nd year. He had been largely engaged in the restoration of ecclesiastical buildings. In Shrewsbury St. Mary's Church and the Abbey Church are amongst the buildings in the town restored by him. Many of the modern buildings of Shrewsbury were executed from his designs. He has been an alderman of the borough since 1877. His eldest son is Mr. Smalman Smith, barrister-at-law, who was recently appointed to a judgeship on the Gold Coast.

Mr. Jeremiah Mathews, surveyor, died on the 4th inst. at his residence in Edgbaston, at the age of 84. Mr. Mathews was the son of Mr. Daniel Mathews, of Hagley. He was born at Hagley in 1799, and was articled to a surveyor in Birmingham. On completing his articles Mr. Mathews began practice on his own account at Stourbridge, as agent to Lord Lyttelton, the grandfather of the present peer of that name. He was also appointed agent to Lord Foley. In 1849 he removed to Birmingham, and established a practice there as an agent and land surveyor, which he continued until his final retirement,—for some years past in conjunction with his sons, Mr. William Mathews and Mr. George S. Mathews.

The House of Lords.—A series of papers on the "History and Antiquities of the House of Lords," by Mr. J. Gairdner, Mr. J. R. Round, Miss Toulmin Smith, and Mr. J. S. Udal, will appear in the *Antiquary* for next year.

BUILDING AGREEMENTS AND BILLS OF SALE.

As we shall presently briefly point out, the clause in building agreements which usually gives the building owner a right to the materials brought on to the ground by the contractor is not a bill of sale within the meaning of the Bills of Sale Act, 1882. It was decided in 1880 in the case of *ex parte* Newitt that this stipulation was also not a bill of sale within the Act of 1854, but it has usually been considered that it fell within the Act of 1878. The words of that statute which have been regarded as applicable to these agreements are contained in the fourth section, and run thus: "And also any agreement, whether intended or not to be followed by the execution of any other instrument by which a right in equity to any personal chattels, or to any charge or security thereon, shall be conferred." This view, however, has now been upset by the recent case of Reeves *v.* Barlow (Law Reports 11, Queen's Bench Division, p. 610), and it is clear that as long as this decision remains unreversed by a court of appeal these agreements do not fall within the meaning of the Act of 1878. The importance of this decision is that these agreements are not made as security for a debt, and are therefore, by Section 3 of the Act of 1882, excluded from the operation of this last statute, and were, if bills of sale at all, absolute bills of sale within the Act of 1878. But now comes this last decision of the Queen's Bench Division, by which it is decided that they are not bills of sale at all. The result, therefore, is to make these very important agreements more secure than ever in favour of the building owner. The facts of this last case show this, for there an execution creditor desired to obtain possession of some thousands of bricks which had been brought upon the landowner's ground for the purpose of erecting some houses at Tunbridge Wells. But the landowner having an agreement such as we have mentioned, asserted his right to them on the ground that by this agreement "all building and other materials brought upon the land should become the property" of him, the landowner and intended lessor. Then came the reply from the execution creditor that this was a bill of sale, and as such never having been registered, was void against him. The County-Court judge held that it was a bill of sale, but the Divisional Court reversed his judgment. This example is sufficient therefore to show that landowners are strengthened in their position, and have a securer hold over a speculative builder than before this recent judgment. The case has been set down for appeal, and it remains to be seen whether this time next year the law will be the same. Meanwhile the decision of the Divisional Court will for a considerable time have to be regarded as having settled the law on this subject.

THE DESTRUCTION OF TOWN REFUSE.

The question of the disposal of the enormous accumulation of vegetable, animal, and other refuse of a large town has always been a source of difficulty to town councils and local authorities, but when the majority of the closets in a town are on what is known as the pail system, the difficulty is enormously aggravated. Wherever the refuse is deposited, it is an evil to the neighbourhood, the pestilential vapours and obnoxious odours which ascend from these heaps of organic refuse, in various stages of decomposition, make the neighbourhood in their immediate locality anything but a sweet-smelling and hygienic elysium, and the town authorities are overwhelmed with indignant effusions from aggrieved ratepayers, who, naturally enough, object to be made olfactory martyrs for the convenience of their fellow townsmen; besides, the fumes from these refuse-heaps often propagate some form of disease of the zymotic class.

By the term "refuse" the writer refers to the indiscriminate materials which are useless from an agricultural point of view, such as some of the accumulations of the ashpits and dust-bins. The indescribable nature of such renders their utilisation for agricultural or other utilitarian purposes impossible; and when Mr. Fryer brought out his furnace for the destruction of such refuse by burning, the problem received for the first time a practical solution, and one in accordance with the remarkably hygienic

regulations of the Mosaic codes, as given in the Book of Deuteronomy.

The furnace, or destructor, as it is appropriately termed, consists of a series of inclined chambers, having at their lower ends ordinary firegrates also inclined; at the upper ends of these inclined chambers the inlet-holes are placed for the reception of the refuse, which is tipped from the carts, and the refuse gradually gravitates downwards until it comes in contact with the fires, and by which it is consumed. Even if the refuse is very damp the radiation of the heat accumulated in the arches of the destructor soon evaporates this moisture. Coal or other fuel is only used to commence the working of the furnace. Afterwards the refuse, *per se*, is sufficiently combustible to continue in a state of combustion. The products of combustion descend by a port or outlet at the upper ends of the chambers into the chimney-flue, where they are led into a lofty chimney to be dispersed into the atmosphere.

The destructor generally consists of a nest of six of the inclined chambers placed back to back, two chambers inclining right and left from each inlet for refuse; the chimney-flue traverses the destructor centrally, and at right angles to the inclined chambers, and is very large, as much as 9 ft. by 4 ft. 6 in. This great size is necessary owing to the vast accumulation of dust, which is deposited by the escaping products of combustion. An ordinary six-cell destructor will consume forty-two tons of refuse in twenty-four hours.

The highly-heated products of combustion from the destructor are generally economised for the purpose of generating steam to drive mortar-mills, clinker hoists, &c. Mr. Fryer's destructors are generally constructed above the ground floor, necessitating the construction of an inclined roadway to their summit. This latter detail of construction is not only a very expensive item of first cost, but adding as it does to the labour of carting the refuse, is a permanent and expensive disadvantage.

Lately a furnace has been constructed for the Bradford Corporation which presents considerable improvements on that of Mr. Fryer. In this furnace or destructor the refuse-destroying chambers are inclined similarly to those already described, but instead of the chambers being placed back to back, they only incline on one side, so that all the fires are on one side only; by this plan a considerable increase of space at the top of the destructor is obtained for storing the refuse intended to be destroyed.

Further, the top of the destructor is not 12 ft. above the ground as is that of Fryer's destructor, but some 18 in. below it, so that the refuse material can be immediately tipped from the carts into the charging hoppers of the destructor, without the necessity of the ascension of the carts up a steep approach. The light clinkers, the remnants of the refuse, which are drawn from the fires, can easily be hoisted up to the ground level, or be forced up by one of Morton's steam ejectors. An admirable feature in this furnace is the arrangement of a reverberatory arch, which divides each of the inclined chambers into two vertical parts in such a way as to compel the heated products of combustion to ascend to the upper parts of the chambers, and then descend over the arch to the foot of the incline, where they escape to the chimney-flue, by means of this arch placed directly over the fire, and acting as an accumulator of heat. The escaping vapours are highly superheated, and any obnoxious constituents they may contain are rendered utterly inodorous and inert.

All the exterior work of the Bradford destructor subject to wear and tear is faced with metalline bricks, and the interior is built with firebricks characteristically acid and fire-resistant. The inventor of this improved destructor is Mr. B. D. Healey, Assoc. M. Inst. C.E., of Liverpool.

The clinkers, which are regularly withdrawn from the fires, make excellent mortar; indeed, if the destructors are carefully worked, and there is a good demand for mortar, the sale of the clinkers may produce an income sufficient to clear working expenses. The proportion of destructor clinkers to slacked lime is forty shovelfuls of the former to twelve of the latter, making 7 cwt. of mortar.

By grinding or crushing the clinkers dry, a clean sharp gravel is produced, suitable for all purposes for which a superior gravel is required. Of course, the steam generated by the waste heat from the destructors can be utilised for any desired purpose, such as, for instance, the driving of a dynamo for producing electricity for lighting and other purposes.

B. H. Thwaite, C.E., F.C.S.

JESUS COLLEGE, CAMBRIDGE.

The corner-stone of new buildings for the accommodation of undergraduates was laid by the Senior Fellow, Mr. D. Westmorland, on the 7th inst.; and there will very shortly be commenced two houses for married Fellows and Tutors. Jesus College has a very large extent of vacant land reaching down behind the College towards the river,—part of it used as a cricket-ground,—and has magnificent rows of trees along its boundaries. The new buildings form the eastern side, about 240 ft. long, of a new court, about 250 by 200 on this land. The choir of the chapel, formerly the conventual church of St. Radegund (admirably restored by Pugin), forms a portion of the south side, while the College buildings, erected by the founder, Bishop Alcock, and their northern extension, form the west side. The north, excepting where the new buildings return for some 25 ft., is open towards the cricket-field and avenues of trees.

The interior of the court will be laid out and planted, and will be joined to the cloister of the old chapel court by a connecting passage. The new court is also reached by a road with gates in Jesus-lane. The new buildings comprise thirty-six sets of rooms for undergraduates, with servants' and porters' rooms, and a water-closet to each set of six rooms, opening off the ground-floor of the staircases. There is also a lecture-room included. The style follows very nearly that of the founder, Bishop Alcock, with some modifications, as the new buildings are of three stories, while his were originally of only two, with a high roof. The new central entrance tower is, therefore, proportionately higher than Alcock's entrance tower now is, with regard to its adjacent buildings; for, like it, it is finished with a stepped battlemented parapet, and has archways with niches over, and shields for coats of arms of benefactors. Comparatively few of Alcock's windows had cusped heads, but all the new windows have cusps, and are of three, two, or one light, as required. The wings project slightly, and are furnished with low stepped parapet gables, following the precedent of the founder's work in the College dining-hall. The material used is red Suffolk brick, with quoins and dressings of Ancaster stone. The paving, as a rule, will be of concrete. Near the south-east angle will be one of the Fellows' houses, the other will be near the block executed some years ago from the designs of Mr. Waterhouse. Both will be in red brick, but of a simpler design than the other new buildings. They will be so arranged that undergraduates can always have access to them when the College gates are closed. The works are from the designs of Mr. R. Herbert Carpenter and Mr. B. Ingelow, of Carlton Chambers, London. The builder is Mr. Bentley, of Waltham Abbey, and the clerk of works is Mr. Higgs.

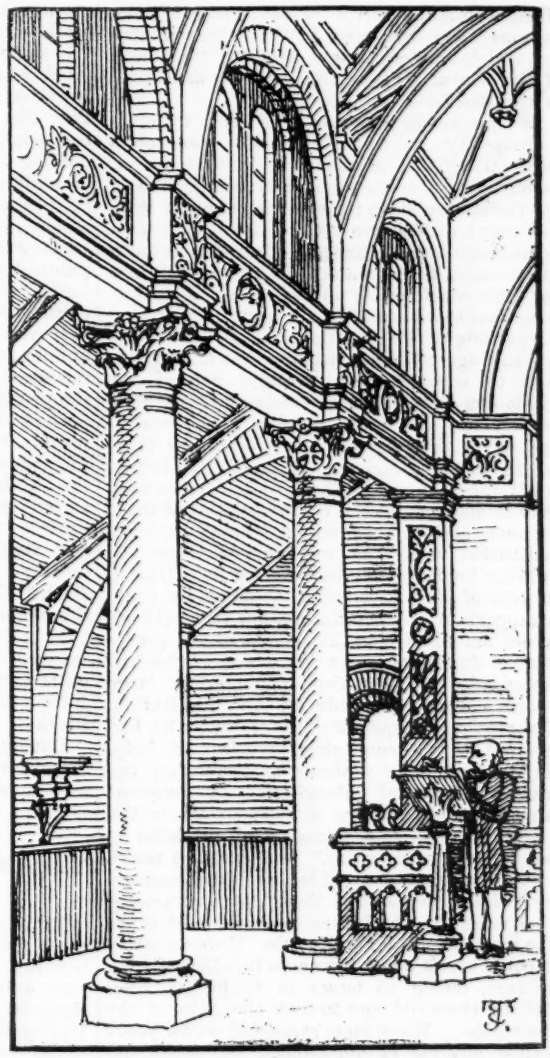
IRON AND CONCRETE.

Sir,—It appears to me that a combination of iron and concrete is the building material of the future for spans and supports, and consequently, that it should be used in churches as well as in buildings of a less monumental character. The result should be a return to a trabeated style of architecture, with far better capabilities than were possessed by the ancient Greeks or other nations who adopted that method of construction.

Having some time before me in which to prepare the working drawings of a proposed church, I take the opportunity, with your permission, of appealing to the experience of your readers in order to arrive at the best manner of combining the two materials; for the opinions of experts seem to differ on the subject.

One shudders at the idea of naked iron in the construction of a church, and the many years during which iron girders have been in use have failed to reconcile us to their appearance, except in bridges and works of a kindred nature. And our instinctive dislike is borne out by practical reasons, for naked iron is found to be a most treacherous material in case of fire. The clothing with concrete not only affords the necessry protection from this danger, but supplies a surface which is capable of receiving dignified architectural treatment.

The question seems to be whether the surrounding concrete adds to the strength of the iron, or adds to the weight that the iron has to carry, in the case of spans. One expert proposes to embed an ordinary rolled iron joist in the concrete; another suggests a top-and-bottom flange only, of blade iron, leaving the concrete to form the web. If the latter be the right method, the former involves a waste of iron. There can be no doubt as to the strength of Portland cement concrete in compression, and the problem to be solved is its proper application for tensile strength. The accompanying illustration is a portion of the first sketch for the church, in which the pillars are 15 ft. apart from centre to centre, and the clearstory relieving arches bring nearly the whole of the superincumbent weight upon these pillars; the question therefore is, what should be the dimensions and construction of an iron and concrete beam to carry its own weight and that of the clearstory windows and the pressure of the aisle roof?



As to the "style," it must result from the materials, and, if it be less Gothic than Basilican, it will not therefore be any less Christian,—the great object, however, is that it should be essentially modern.

Edward J. Tarver.

Holloway. — A new church, to be called All Saints, is going to be erected in the parish of St. John, Upper Holloway. The design has been selected in a limited competition (under motto) of five architects, Mr. J. E. K. Cutts, of Southampton-street, Strand, being the successful competitor. The church is to seat 700 at a cost of 5,000*l*.

BUILDERS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

THE thirty-sixth anniversary dinner in aid of funds of this institution was held at the Freemasons' Tavern on the 8th inst. (as briefly mentioned in our last), Mr. Henry G. Smith, president, in the chair. There was an unusually large attendance of subscribers and friends.

The usual loyal and patriotic toasts were duly honoured, Major Brutton, secretary of the Institution, responding for the "Army and Navy," and Major Stanley G. Bird for the "Reserve Forces," the chairman making kindly allusion to Major Bird's gallant rescue of four persons from drowning in the Avon recently, for which service he was awarded the medal of the Royal Humane Society, as mentioned in the *Builder* of the 6th ult.

In proposing the toast of the evening, "Prosperity to the Builders' Benevolent Institution," the chairman said that it was encouraging to trace the history and growth of the Institution since its establishment in 1847. Not only had it grown in the sense of being able to maintain an increasing number of pensioners on its books, but the amounts of the pensions had been considerably increased of late years. Some few statistics as to the pensioners themselves might be mentioned. In 1877 the average age of the pensioners was from sixty-nine to seventy; the average age of the pensioners now on the funds was between seventy-two and seventy-three. The average age of pensioners who had died was from seventy-nine to eighty. It could not but be gratifying to the subscribers to know that they were ministering to the real necessities of these old men and women, and he trusted that the Institution would be well supported by the building trades, as it deserved to be. During his year of office he intended to do all he could in support of the Institution, but he could not expect to approach to the success of his predecessors during the last three years, who had succeeded in obtaining abnormally large amounts for the funds of the Institution. Nevertheless, despite dulness of trade, he had received very encouraging promises of help. He was especially desirous of increasing the number of annual subscribers. A frequent excuse for not giving a subscription to the Institution was that "trade had not been so bad for very many years," but that was really a reason why master builders should subscribe, for if times were so bad there was no knowing what might be the future necessities of those who were at present well-to-do. Unfortunately he could recall many instances in which master builders, owing to losses in trade, had been glad in their old age to seek the help of the Institution. Many men struggled on for years against adverse circumstances, but when old age and infirmity came upon them they were able to struggle no longer. He regretted to see that at the ensuing election of pensioners there were twelve candidates for the five vacancies on the list. Some of these candidates were men well known to many of them, and men who, in the days of their prosperity, had been subscribers to the funds of the Institution, little thinking that they themselves would ever need its aid. In view of the vicissitudes of a builder's career, he thought the Institution ought to be much more largely supported by the building trade than was really the case, and he hoped that those who only gave an occasional donation would give an annual subscription instead. At the same time they should be glad if any annual subscribers could see their way to increase the amount of their subscriptions. He regretted that the esteemed Treasurer of the Institution, Mr. Plucknett, was absent owing to illness. As everybody knew, Mr. Plucknett had for many years past rendered great service to the Institution, and they all hoped for his speedy recovery, and trusted that he would be spared to them for many years yet to come.

The toast was very heartily received.

The next toast was "The Chairman and President," proposed by Mr. J. T. Chappell, who spoke of Mr. Smith as the representative of a good old firm,—a firm which was held in high repute not only by the trade, but by Government departments and other clients for whom they had executed contracts.

The Chairman, in responding, referred to the fact that his grandfather took an active part in the founding of the Institution.

Mr. Fourdrinier proposed "The Vice-Presidents and Trustees," coupled with the name of Mr. Thomas F. Rider, who briefly responded.

Mr. F. J. Dove proposed "The Treasurer" (Mr. George Plucknett, J.P.), and spoke of the value of his services to the Institution.

Mr. Howard Colls, in proposing "The Architects and Surveyors," said he was glad to find that, in spite of Sir Edmund Beckett, the architects were still alive, and, as far as he could see, they were likely to live for some time yet,—at any rate, so long as the conditions of life remained as they were at present. Of course, builders were bound to confess that there were architects of various kinds. There were some, for instance who could smile blandly while rejecting several barge-loads of bricks, and some who would think nothing of telling a builder to cart away several thousand pounds' worth of valuable stone. But he had no doubt that the architects who were present on that occasion were gentlemen who were desirous of holding the happy medium between the rights of builder and client. With "The Architects" he begged to couple the name of Mr. Barry, whose grandfather's name was identified with what was by a long way the finest modern public building in London. But just as the architect should be the means of settling difficulties between builder and client, the quantity surveyor was a necessary mediator between builder and architect. Speaking as a builder, he felt strongly that all architects who worked on the principle that a quantity-surveyor was not needed should be avoided by builders as they would avoid a pestilence. In these times it was very difficult indeed to make a profit in the building trade. Mr. Labouchere had stated that the average profit of a builder's business was 30 per cent. He regretted to say that his own experience was that a builder's profits did *not* average 30 per cent. With "The Surveyors" he begged to couple the name of Mr. H. P. Foster.

Mr. Barry and Mr. Foster having briefly responded, the concluding toast ("The Committee and Stewards") was given by Mr. Alfred Smith and responded to by Mr. James Blyth.

During the evening subscriptions and donations, amounting to a total of 854*l.* 10s. 6d. were announced.

ARCHÆOLOGICAL LECTURES AT THE BRITISH MUSEUM.

ON Wednesday last the first of what promises to be a very interesting and valuable course of lectures was given in the new Anglo-Saxon room at the British Museum, by Mr. J. Frederick Hodgetts, late Examiner in English to the University and district of Moscow, and Professor of the English Language and Literature in the Imperial College of Practical Science and in the Imperial Usatcheffskie Tschernyaffskie College of Moscow. The object of these lectures has been thus stated in the prospectus announcing them:—"In view of the great importance to the English public of becoming better acquainted with the *Early English Antiquities* (commonly called Anglo-Saxon), preserved in the national collection at the British Museum, a course of lectures will be delivered on the antiquities in question, as illustrative of certain interesting points in English History." The first lecture, on "The Sword," illustrated by direct reference to the case of Early English swords in the centre of the room, was delivered to a far too small but very appreciative audience. Among those present were the Rev. Prebendary Sir Talbot Baker, Bart. (in the chair), Mr. Ruskin, General Sir John Armstrong, and several ladies and gentlemen whose names are known as interested in questions both of social and artistic history. In the course of his address the lecturer called attention to the special form of the Early English sword, especially as contrasted with the short Roman sword, and pointed out its similarity to, or rather identity with, the Scandinavian type, and threw some brilliant and striking side-lights on the philology and the original meaning and bearing of various words and expressions into which the name of the time-honoured weapon treated of has entered, in one form or another.

We may have opportunity on another occasion to give a somewhat detailed *résumé* of this and the succeeding lectures of the course. In the meantime we may express emphatically our concurrence in the opinion expressed by the chairman, and subsequently by Mr. Ruskin, in regard to the value of such lectures as these in giving real and vital interest to such a collection as that which now occupies, in the Anglo-Saxon room, part of the space long usurped by stuffed animals. Mr. Ruskin admitted that the lecturer had brought forward facts which had overturned or shaken "some of his most cherished opinions," and suggested the advisability of engaging a permanent lecturer, thoroughly imbued with the importance of the subjects under his special charge, regularly to explain them to the public; an institution by which the value of such collections would be greatly enhanced.

That is a matter for the British Museum authorities to consider; but we are very glad to take the opportunity of at least drawing further attention to this course of lectures on a collection which is still comparatively a novelty in the British Museum, and is of the greatest interest in its bearings on Early English history. The lectures in question are not intended exactly to be "popular" (nor, indeed, does the gallery in which they are given afford space for a large audience); but there must be many in London who would think an hour well employed in listening to a discourse on English archæology, in which real information is invested with the additional interest which a lecturer who thoroughly cares for his subject knows how to impart.

The lectures are given in the Anglo-Saxon Room at the British Museum, at two p.m. on Wednesdays, and the remaining subjects and dates are as follow:—

Nov. 21.—"The Shield."
Nov. 28.—"The Spear, Javelin, and Arrow."
Dec. 5.—"The Brooch."
Dec. 12.—"The Ring."
Dec. 19.—"Beads, Glasses, Drinking-vessels, and Burial."

Tickets (one guinea for the course) can be obtained at Mudie's Library, or from Mr. J. F. Hodgetts, 53, Finborough-road, South Kensington.

ARCHITECTURAL ASSOCIATION SKETCHES, 1883.

THESE few details of some of the buildings visited by the Association during their week at Yeovil, were, of necessity, somewhat hurriedly measured, but have been carefully worked out by Mr. Stonier, and sufficiently explain themselves.

The most interesting of them is the screen from Bradford-Abbas Church, which, until the year 1859, carried a solid wall, some 2 ft. thick, dividing the chancel from the nave; but at that date the wall was removed, and the usual chancel arch inserted. The church contains a fine stone font, square on plan, with carved figures of mitred bishops at the angles, one being said to represent William of Wykham. There are also some very good oak seat-ends, a few of which have been reproduced at Sherborne Abbey during the recent restoration. One of these bears a full-length figure of St. Paul with sword and book; another showing an oak tree, on the topmost branch of which sits a bird having an acorn in its bill, while beneath a pig appears to be spending a good time among other fallen acorns.

C. W. MOUNTFORD.

VILLA RESIDENCES AT ADDLESTONE, SURREY.

THESE villa residences, which have been recently erected for Mr. T. Snowden, are built of good red brick to the height of the string-course above the windows, and above that of yellow brick, the roofs being covered with slate. They comprise drawing-room, dining-room, library, hall and porch, kitchen, &c., on the ground-floor, and on the first-floor five bed-rooms, dressing-room, bath-room, and water-closet, and two bed-rooms for servants in the attics. The stables have each one stall and coach-house, with hay-loft above.

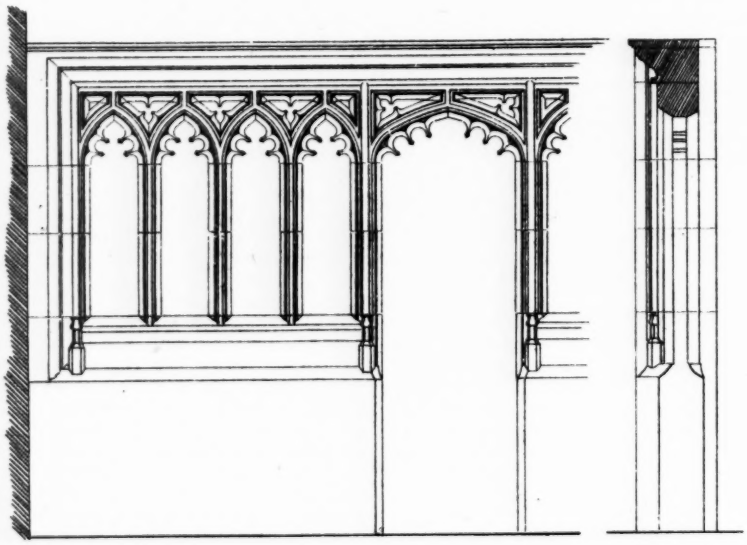
The joiners' work in the principal rooms is of pitch-pine, varnished. The whole of the works have been satisfactorily carried out by Mr. Gale, builder, Woking, at the cost of 2,100*l.*, Mr. Charles H. Cooke, F.S.A., Burlington Chambers, 180, New Bond-street, being the ct

SKETCHES AT ARCHITECTURAL ASSOCIATION EXCURSION, 1883.

By Mr. E. W. Mountford.

Chancel Screen

Bradford Abbas Church. Somersetshire.



Elevation

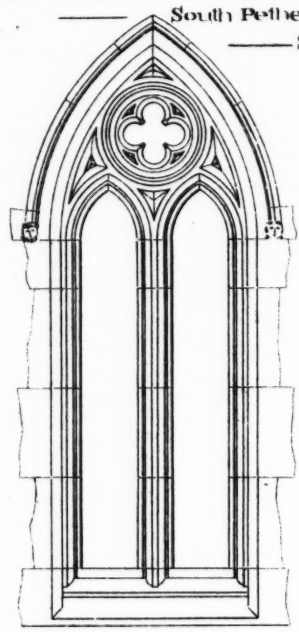
Section

Plan

Section

South Window of Chancel

South Petherton Church. Somersetshire.



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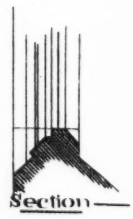

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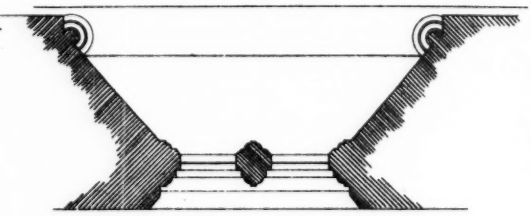
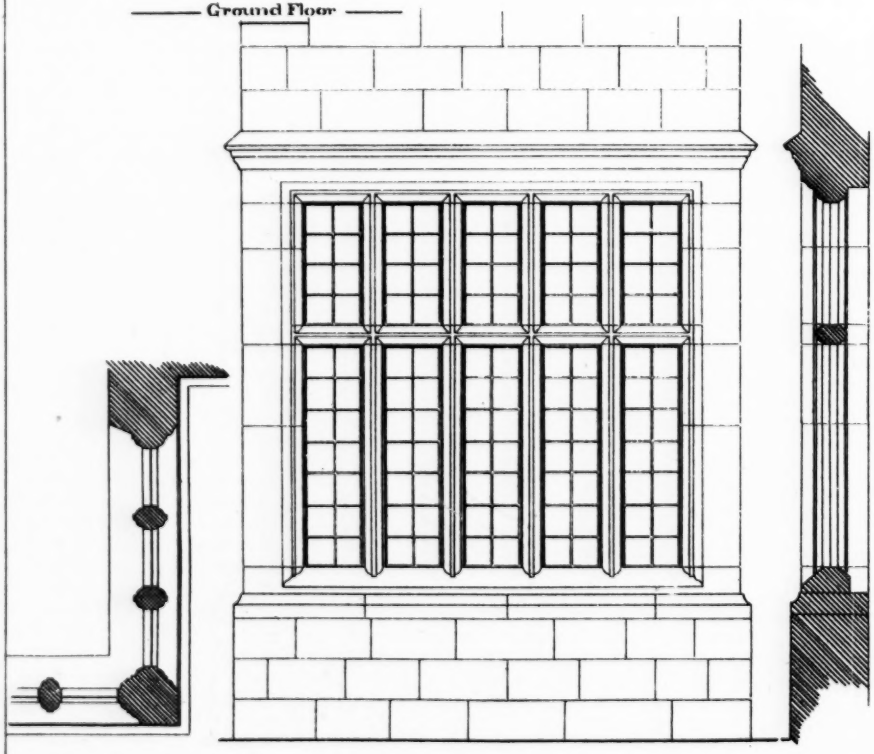


Plan

"Newton House" near Yeovil.

Details of Bay Window

Ground Floor



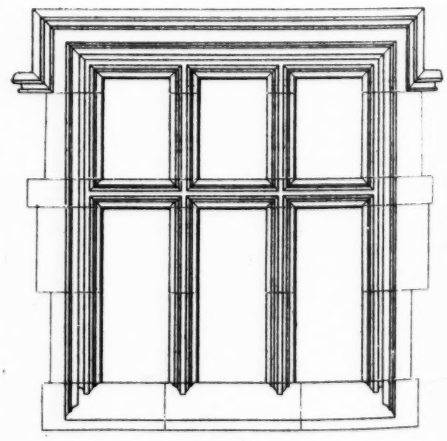
Half Plan

Front Elevation

Section

Window on Ground Floor

Montacute Priory Somersetshire.



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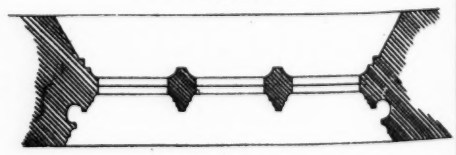


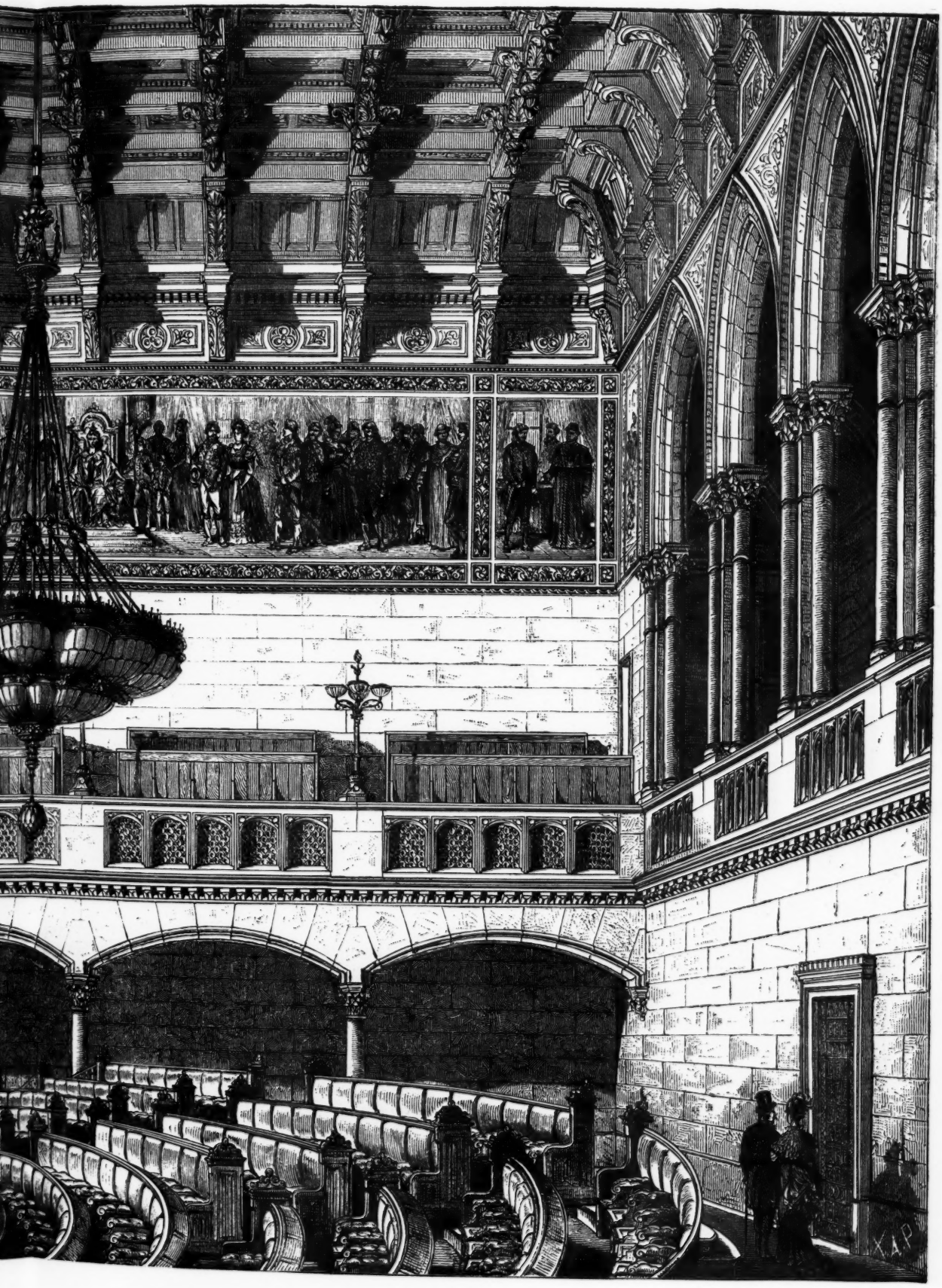
Plan

Drawn by J. Slopper.

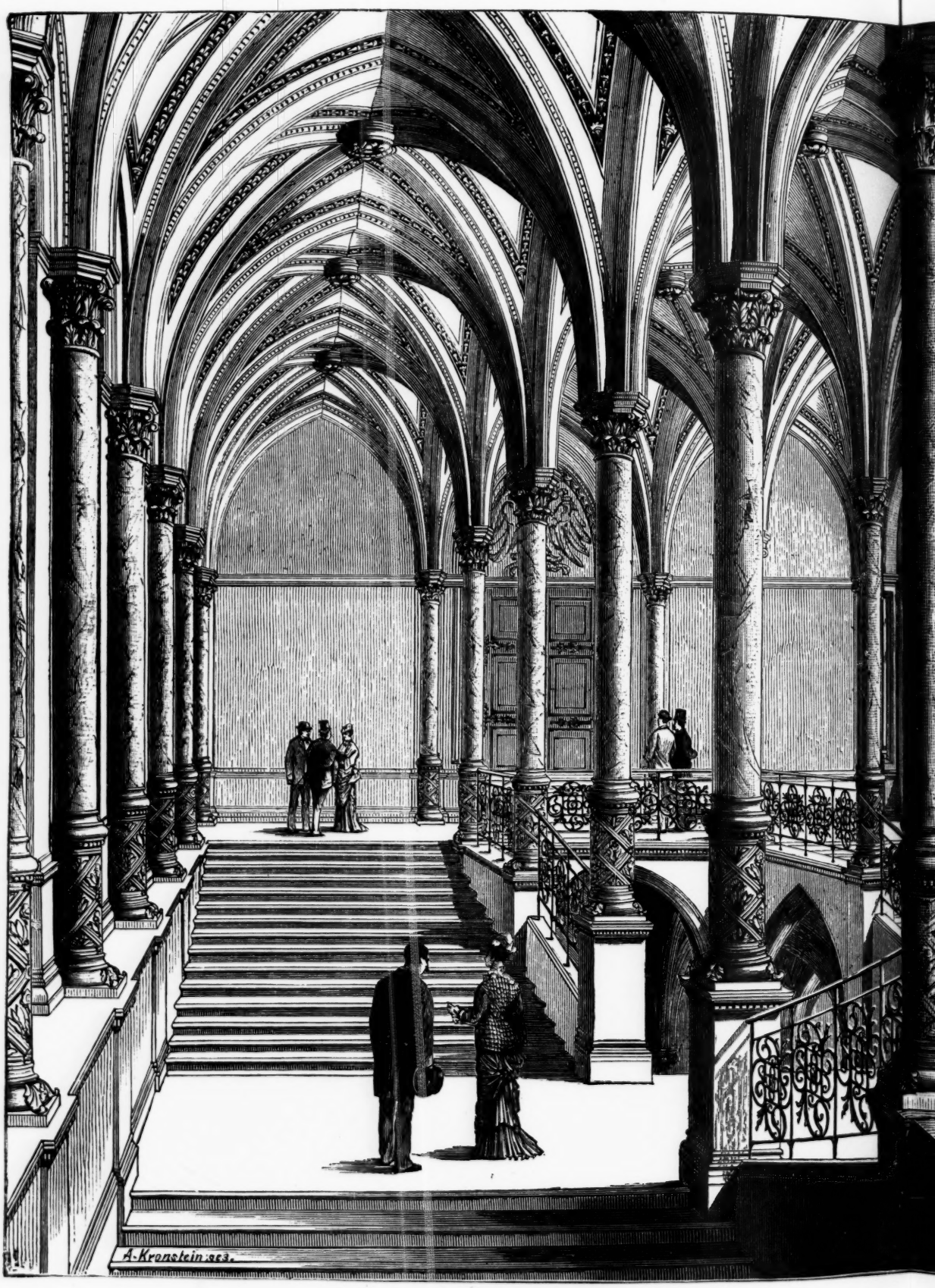
Measured by E. W. Mountford.

Vincent Brooks, Day & Son, *Photo-litho.*

COUNCIL CHAMBER, NEW TOWN-HALL, VI



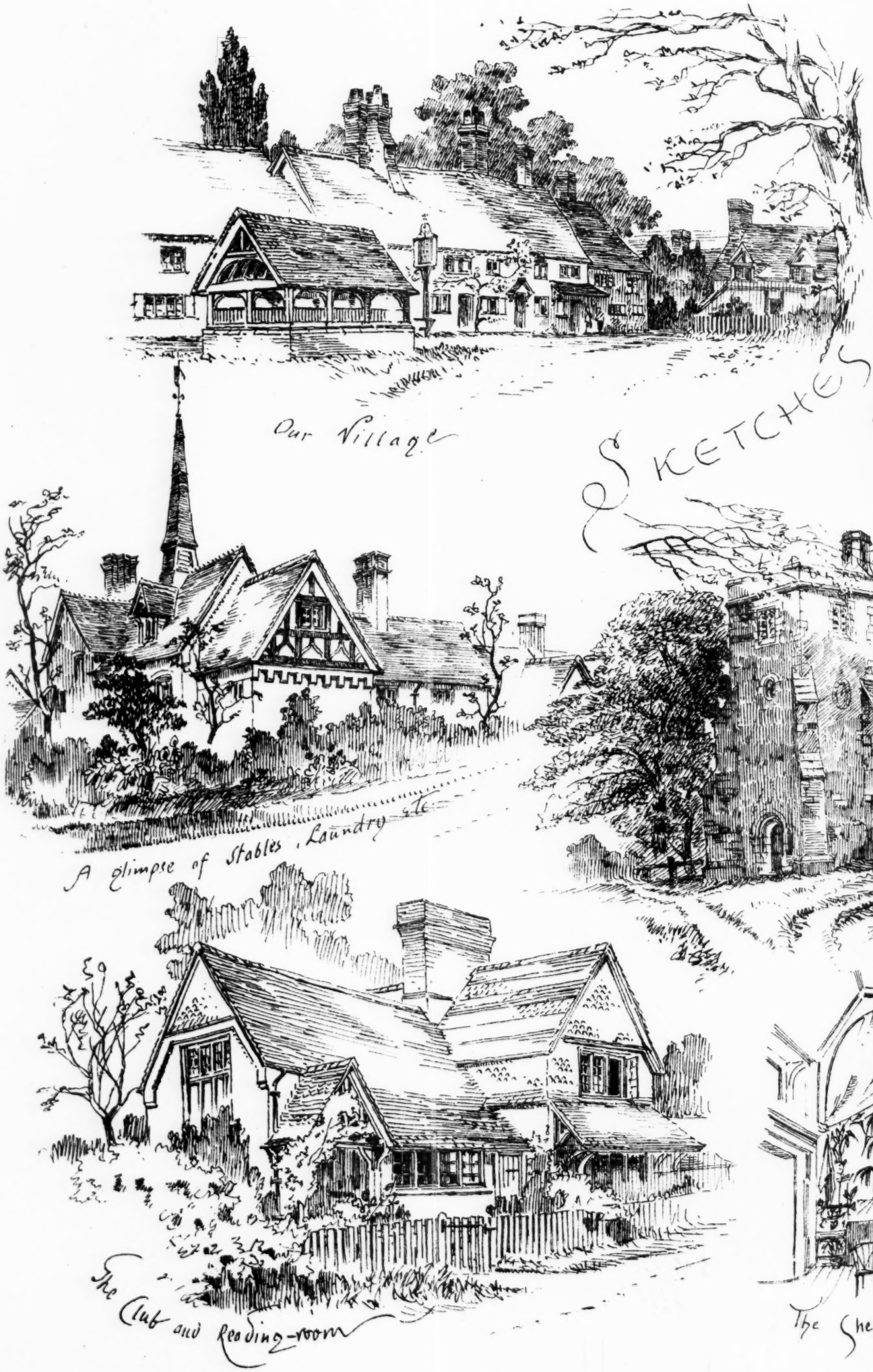
HALL, VIENNA.——Herr F. Schmidt, Architect.



PRINCIPAL STAIRCASE, NEW TOWN-HALL, V

HALL, VIENNA.——HERR F. SCHMIDT, ARCHITECT.

SKETCHES AT



Our Village

A glimpse of Stables, Laundry etc

The Club and Reading-room

The Shepherdesse

Wyman & Sons, Photo-Litho

HAPPYTON.

OCTOBER 1883.

"The House"

THE CHYRCH

A Cottage - old style -
Picturesque, perhaps; but

desses Bower -

A Cottage on the Estate - New style

Vincent Brooks, Day & Son, *Photo-litho.*

VILLAS AT ADDLESTONE, SURREY. MR. CHAS. H. COOKE, ARCHITECT.

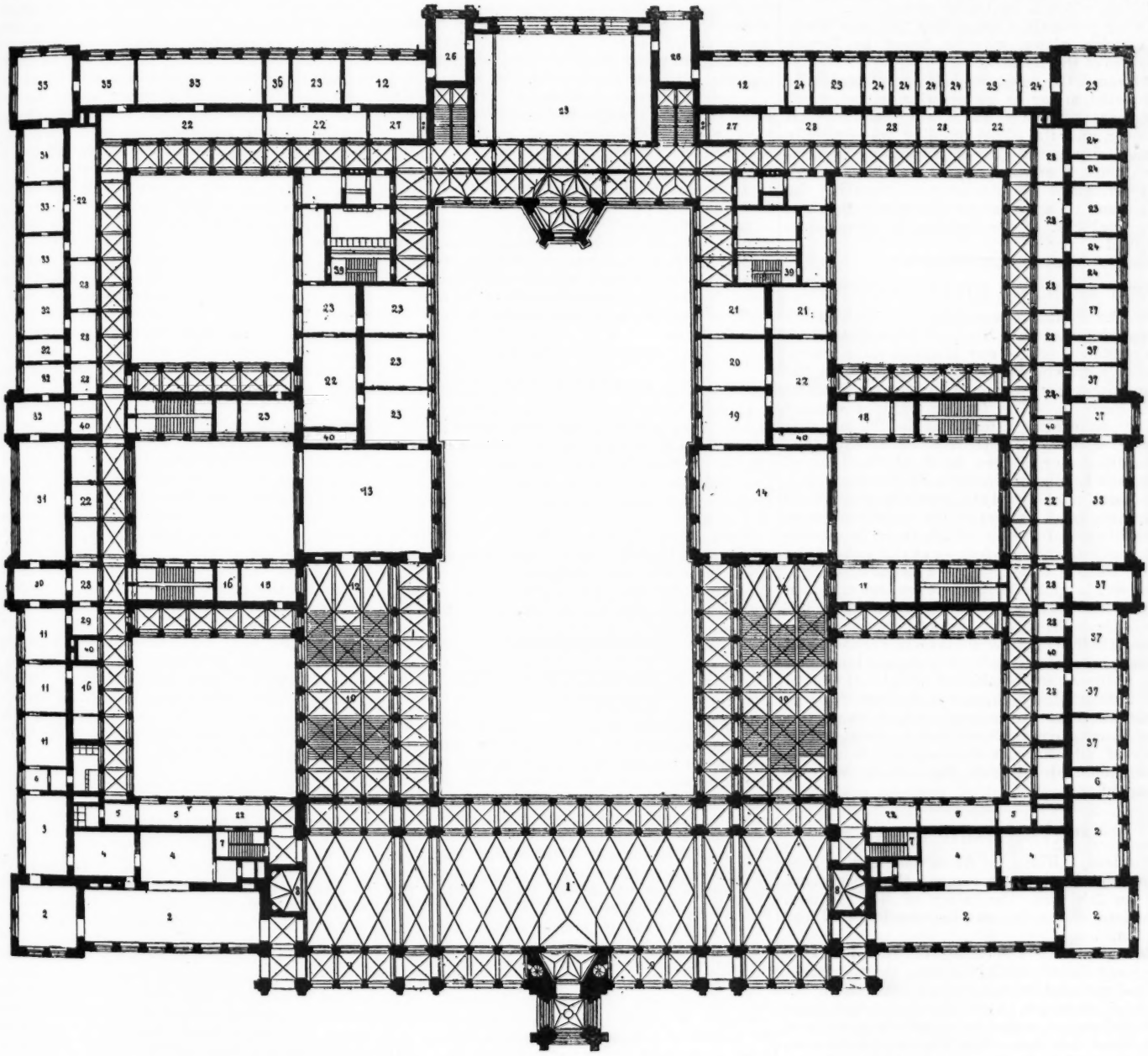
THE NEW TOWN-HALL, VIENNA.

The new Town-hall, or Rathhaus, of Vienna was begun thirteen years ago. The first sod was turned on May 23, 1872, and on June 14, 1873, the foundation-stone was laid. Oberbaurath Friedrich Schmidt, who, amongst a crowd of competitors, native and foreign, was selected as the architect of the building, directed operations until its completion. Although his design was accepted almost in its entirety, the architect was controlled by a board of inspection, the municipality having decided to be their own builders,—that is to say, they did not let the construction of the whole building at a contract price, but carried it out on their own account, even supplying their own materials as they wanted them, and thus taking advantage of the fluctuations of the market. At the same time, whilst having due regard to the important question of expense, they were by no means "stingy" in doing the work. Everything was to be, and is, of the best description. Only the finest hydraulic lime is used for the substructure, and all the ironwork is of the best Styrian iron. The façades and ornamentation are throughout in freestone, which has added considerably to the cost of the building. The site chosen on the so-called "Paradeplatz" turned out to be of an excellent nature for a large building. In two places only mines (dating from the siege by the Turks) were discovered.

The new Rathhaus lies in the centre of the great square, between the Ringstrasse and Lastenstrasse, and has on its right the new university buildings, on its left the new houses of parliament. It forms a parallelogram 499 ft. by 404 ft., covering an area of over 4½ acres. As will be seen from the plan of the first floor, which we give in this week's *Builder*, the building encloses seven courtyards, a larger central one, and, separated from it by wings, three smaller ones on each side. The centre courtyard is 197 ft. long by 115 ft. wide. The principal hall is in the first floor, on the side facing the Ringstrasse. It is marked by a projecting loggia, and in its centre by the principal tower, 328 ft. high. The whole centre plot is, besides, distinguished by four smaller towers, 200 ft. high, two on each side. Owing to the great number of offices required, it was found necessary to have five floors, only the principal one of which has a considerable elevation, 25 ft. The ground floor has a height of 14 ft.; the floor above it, of 15 ft. 6 in. Next follows the mezzanine story of the same elevation. The two lower floors form arcades both on the principal façade and towards the great courtyard. The mezzazine forms a kind of frieze between the two principal stories. The story over the principal floor is 16 ft. 6 in. high, and is surmounted by a moulding 4 ft. 3 in. high. The roofs, partly mansards, partly hip roofs, are richly adorned by oriels and louvres. The four corners end in pavilions.

On the principal front, geometrical stairs of fourteen steps with terrace lead to the arcades of the ground floor. The vault of the great tower forms the principal entrance to a large vaulted vestibule, called the "public hall" (Volkshalle), 111 ft. 6 in. long and 36 ft. wide. It opens to the right and left into smaller vestibules leading to the principal staircase. Through the large public hall, which, as its name implies, serves for public meetings, the large central courtyard may be reached, which may also be entered by the arcades. Two large vestibules, one in each of the side fronts, serve as carriage approaches which, passing through the smaller courts, lead into the principal courtyards. The principal staircase has been given such a form, and is so placed, that it may be reached both by persons entering by foot from the principal entrance and by those arriving in carriages.

The principal hall (Festhalle) is located, as already remarked, on the first floor, and is carried up through the next floor; it is approached by the great staircase (of which we give a view). It covers an area of 11,621 square feet, is



THE NEW TOWN-HALL VIENNA.——*Plan of Principal Floor.*

1. Principal hall.
2. Refreshment-rooms.
3. Smoking-room.
4. Serving-rooms.
5. Ladies' cloak-rooms.
6. Passage.
7. Gallery stairs.
8. Orchestras.
9. Loggias.
10. Principal staircases.
11. Drawing-rooms.
12. Ante-halls.
13. Ceremonial hall.
14. Magistrates' room.
15. Cloak-room.
16. Closet.
17. Consulting-room.
18. Room of the burgomaster for receiving deputations.
19. Council-room.
20. Magisterial director.
21. Offices of the municipality.
22. Waiting-rooms.
23. Sectional rooms (offices).
24. Offices.
25. Common-council hall.
26. Consulting-rooms.
27. Cloak-rooms. 28. Ante-rooms.
29. Attendants' rooms.
30. Private office of the burgomaster.
31. Reception-room.
32. Rooms of the presidency.
33. Secretary's rooms.
34. Attendants' rooms.
35. Municipal offices.
36. Shorthand-writers' room.
37. Offices of the magistracy.
38. Committee-room.
39. Stairs for the staff.
40. Heating-rooms.

187 ft. long and 64 ft. wide, and has a height of 45 ft. On the side towards the Ringstrasse an open loggia is placed; towards the principal courtyard an arcade supported on arches. Choir-like structures on each end of the hall are intended for the orchestras. A gallery on a level with the top floor runs round the three inner sides. The common-council hall (of which we also give a view) has been placed in the centre of the first floor of the rear front. It runs through two stories, has an area of 37,122 ft., and provides ample sitting-room for 150 persons. There are galleries in three sides. The ceiling is carved in wood. The hall may be lighted by gas or the electric light, and this arrangement is carried out throughout the building, which is heated by steam.

Other particulars respecting the new town-hall, with views, may be found in former volumes of the *Builder*.*

Although the new town-hall was substantially completed, as far as its exterior is concerned, last year, the interior was not finished until this summer, and the whole building was formally handed over to the City of Vienna on September 12 last, when the Emperor himself attended, and performed the ceremony of inserting the last stone in a corner of the principal tower. The total cost of the building is close upon 900,000*l*

WEST FRONT OF MILAN CATHEDRAL.

In the limited competition for designs for completing the west front of Milan Cathedral, the result has proved anything but satisfactory. The only drawings of importance sent in by the competitors were those of Professors Beltrami and Ferrario. The former confines himself chiefly to certain alterations in the existing façade designed to correct or remove the absurdities perpetrated in it at the time of Napoleon I. Signor Ferrario, on the other hand, whose design obtained the premium, proposes to erect two small towers at the opposite corners of the façade, between which there is a pediment with the three windows at the ends of the three middle aisles. The successful design, however, is spoken of by independent critics in no very favourable terms. The towers are too small for bells, though the architect designed them as bell-towers; while as merely ornamental additions to the façade they appear too large. The pediment is too bald and trivial. Owing to the unsatisfactory character of these designs, the authorities are strongly urged to open a new general competition, and to invite architects of all countries to compete. It is, however, doubtful whether the advice will be accepted.

SURVEYORSHIP ITEMS.

Tunbridge Wells. — At a meeting of the Tunbridge Wells Improvement Commissioners, on the 7th inst., the salary of Mr. P. Dodd, Assistant Surveyor, was increased to 155*l*. per annum.

Brackley.—At a meeting of the Brackley Highway Board, on the 6th inst., the Clerk said he had received twenty-five applications for the post of surveyor, four of whom had been selected and requested to attend the meeting of the Board that day. The four candidates were Mr. W. A. Lloyd, St. Anne's-on-Sea, Lancashire; Mr. Ricks, Walsall; Mr. Ralph Phipps, Staines; and Mr. J. Bourne, of Matlock. Mr. Lloyd and Mr. Ricks were present, and he had received a letter from Mr. Bourne stating that he was obliged to attend a meeting of the Board with which he was connected, and could not possibly attend, but would do so upon another occasion if it was the wish of the Board. Mr. Judge moved that Mr. Lloyd be appointed, at a salary of 200*l*. a year. The Chairman, however, said that as far as testimonials went Mr. Bourne was the most suitable candidate, and it was suggested that the consideration of the question should be adjourned to some other day for the attendance of Mr. Bourne. After some discussion as to the pay. ment of candidates' expenses, the question was adjourned for a week.

Sanitary Institute of Great Britain.—The Autumn Congress and Sanitary Exhibition of this Institute will be held in Dublin in the year 1884.

* See *Builder*, vol. xxxv., p. 980; and vol. xli., p. 516.

THE DISINFECTION OF THE ATMOSPHERE.

Dr. Robert J. Lee gave an interesting lecture on this subject at the Parkes Museum on Thursday evening last. He began by explaining what is the chief cause of putrefaction, and showed it could be prevented by removing from the air those minute bodies, bacteria and their germs, in which it originates. The mode in which so-called antiseptic agents produce effects was explained, and the products of coal-tar distillation, especially of carbolic acid, were mentioned as most powerful in antiseptic properties. The difference between the use of antiseptics in fluid and in the state of vapour was demonstrated, and the burning of a substance was proved to be unscientific; as the antiseptic properties were thus destroyed, instead of being converted into vapour or smoke, in which form it would act upon the organic particles floating in the atmosphere. The principal question discussed by Dr. Lee was whether it was possible to disinfect the air and thus prevent the spread of some of those diseases, the germs of which are conveyed in the atmosphere. He considered that it was most important to decide upon the principles first, and then put them into practice; and not delude ourselves with the idea that some particular plan in which we had confidence was really useful when it was unscientific, and quite valueless; for example, trying to disinfect a sick-room by keeping water mixed with Condy's fluid, or carbolic acid, was shown to be of no practical use.

COMPETITIONS.

Board Schools, Carlisle.—The Carlisle School Board have awarded the first premium and adopted the designs of Mr. George Dale Oliver, of Carlisle and Workington, for the new Schools in Lowther-street. The second premium has been awarded to Mr. T. T. Scott, of Carlisle.

Frodingham Cemetery.—Messrs. Bellamy & Hardy, of Lincoln, have been awarded the first premium for designs for the New Cemetery for the Frodingham and Brumby Burial Board, and Mr. R. Clamp, of Hull, the second.

DANGERS TO HEALTH ARISING FROM WHITEWASH, &c.

The *Deutsche Bauzeitung* lately remarked that the danger to health arising from the whitewash usually employed (as well as from the substances used in causing wall-paper to adhere, and the binding materials in paints) have frequently been commented upon. On account of the injury done to brushes by the freshly-slaked lime, it is but seldom that lime-whitewash is employed. It is, of course, difficult to exercise control on this subject, when it is a question of disinfection. Binding materials of an organic nature, serizin, size, or paste, are used to secure better adhesion. Thus it is remarked that there is in some cases the danger of infection from the substances used in the preparation and fixing of wall paper. The addition of $2\frac{1}{5}$ lb. of boracic acid for each 22 gallons of ordinary whitewash is said to be a sure preventive of dangerous results. This admixture will, it is said, tend to obviate in many cases the injury which the colours suffer when paper is put on a recently plastered wall, or when size-colour is used for a similar purpose.

NEW BUILDINGS IN ST. SWITHIN'S LANE.

Between Messrs. Rothschild's offices and Salters' Hall, in St. Swithin's-lane, and opposite to the City Carlton Club, a handsome new block of shop and office premises has just been erected. The shops, three in number, are divided in the front by polished red Aberdeen granite columns. The entrance to the offices in the upper part of the buildings is near the King William-street end of St. Swithin's-lane, between the shops. There are two stories above the ground-floor, the elevations are faced with Portland stone, decorated with a good deal of carved work.

Mr. W. Wimble, of Queen Victoria-street, is the architect, and Mr. W. Brass, of Old-street, the contractor. The cost of the buildings is upwards of 7,000*l*.

RESTORATIONS AT THE CHURCH OF ST. ANDREW UNDERSHAFT.

Some two or three years ago the ancient Church of St. Andrew Undershaft, St. Mary-axe, in which lie the remains of Stow, the historian of London, as well as many other celebrities known to fame, was to a great extent internally reconstructed from the designs and under the superintendence of Mr. Blomfield.

During the last three months the church has again been closed for the purpose of undergoing alterations and internal decoration. The former consist of the reconstruction of the upper portion of the tower, and the addition of a new vestry. The old materials of the upper part of the tower have been removed to the extent of several feet in depth, and the structure is in course of being restored, and to some extent modernised, by the erection of three lofty pinnacles, and a bell-turret at the north-west angle. The new vestry which has been erected is at the north-east angle of the church. It is faced with Kentish rag stone, and has a parapet in Portland stone. The interior decorations consist of the removal of all the colouring and whitewash from the walls and arcade columns and arches, all of which have been painted and flatted, the arcade columns and arches in pale buff and the walls in a delicate grey tint. In the spandrels of the arches there are mural oil paintings representative of sculptural subjects and characters, but for many years past these have been entirely hidden from view, being obscured by a facing of whitewash. This has now all been cleared away, and the paintings restored by having been cleaned and varnished. The panels of the ceiling have also been varnished, the bosses re-gilt, and the shields picked out in colours. The shields include, amongst others, those of St. Andrew, St. George, and the City of London, and a new shield has been introduced,—that of the Bishop of Bedford, now rector of the parish. The shield, which is in blue, white, and gold, is surmounted by a mitre. The organ, which is now placed on the south side of the chancel, has been taken down, cleaned and enlarged. The interior decorations are now almost completed, but the restorations at the tower and the new vestry will take some time longer to complete.

Mr. Chatfeild Clarke is the architect for the present works, which are being carried out, those of the tower by Mr. Ansted, of Battersea, and the vestry and internal decorations by Mr. Heeps, of London-wall.

NEW MODEL LODGING BUILDINGS IN LAMBETH.

Under the designation of "Westminster Chambers," a new block of buildings has just been erected in Westminster Bridge-road, near Messrs. Maudslay's engineering works, which are chiefly intended for the accommodation of unmarried artisans. The building has a frontage of 30 ft. to Westminster Bridge-road, with a return frontage in France-street, 70 ft. in depth, and contains four floors and a basement. It is faced with stock brick, relieved by red brick string-courses and window-heads. There is a main ventilator rising from the roof connected with ventilating-shafts from each floor in the building. The internal arrangements provide for the general convenience and comfort of the lodgers, the basement being arranged as a large and well-appointed kitchen, with every facility for cooking, the establishment likewise including a reading-room.

The building has been erected by Mr. Lewis Levy, under the superintendence of Mr. Hebden as clerk of the works.

Presentation to an Employer. — The workpeople of Messrs. Minton, Hollins, & Company, the well-known encaustic tile manufacturers, have presented Mr. W. C. Hollins, son of the senior partner of the firm, with an elaborately-worked silver epergne, on the occasion of his marriage. The presentation took place on the works, and in the presence of nearly all the hands employed. Mr. Mason, manager, introduced the oldest servant of the firm, who made the presentation. Mr. Hollins briefly expressed his recognition of the kindly feeling which had been manifested.

THE ALBERT EXHIBITION PALACE, BATTERSEA PARK.

THE spacious new building on the border of Battersea Park, designated the Albert Exhibition Palace, of which Messrs. Bell, Miller, & Bell are the architects, and Messrs. Bywater & Sons the contractors, is making satisfactory progress, and it is expected that the building will be completed and opened in the spring. The principal entrances are intended to be on the north side, approached from Battersea Park, but there will also be entrances from the south and east and west sides of the structure. With the exception of the south elevation, the building, like the Crystal Palace, will be almost entirely constructed of iron and glass; and all the iron columns, girders, and other materials which formed part of the Dublin Exhibition building, and which were purchased for the Battersea Park structure, are now in position, including the lofty transept at the west end. The south frontage has already been carried up to a height of nearly 30 ft. This elevation is mainly in Portland stone, and the stone from the old law courts at Westminster is being re-used for it.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

5,097. G. Asher, Balsall Heath. Ash-pans, &c. Oct. 26, 1883.

5,102. G. Davies, Manchester. Stoves, ranges, &c. (Com. by F. Jackson, San Francisco, U.S.A.) Oct. 27, 1881.

5,112. J. W. Gibbs, Liverpool. Ventilation for buildings, &c. Oct. 29, 1883.

5,167. E. E. Allen, London. Construction of portable buildings. Oct. 31, 1883.

5,211. G. W. von. Nawrocki, Berlin. Floors, thresholds, staircase steps, &c. (Com. by Messrs. F. Arnecke & Co., Blankenburg, Germany.) Nov. 2, 1883.

5,216. F. A. Wendt, Croydon. Ventilating rooms and buildings. Nov. 2, 1883.

5,221. F. N. Seyde, Birmingham. Preventing the spread of fire in buildings, &c. Nov. 2, 1883.

5,270. T. Bauchop, Alloa. Ventilator. Nov. 7, 1883.

5,281. J. S. Stevens and C. G. Major, London. Spring hinges for doors. Nov. 8, 1883.

5,285, E. Barber and B. Barber, Tring. Blinds. Nov. 8, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Oct. 30, 1883.

3,151. W. Corliss, Providence, U.S.A. Fireproof buildings, vaults, &c. June 26, 1883.

3,157. T. H. Rees, London. Manufacture of tiles, slabs, panels, &c., for walls, floors, hearths, ceilings, &c. June 26, 1883.

3,204. J. Farrimond and J. Whittaker, Southport. Ventilating closets. June 28, 1883.

Nov. 2, 1883.

3,247. J. Carrick, Glasgow. Cooking-ranges and ovens. June 30, 1883.

3,311. D. C. Cameron, London. Flushing apparatus. July 4, 1883.

4,697. W. R. Lake, London. Water-closets, &c. (Com. by J. P. Putnam, Boston, U.S.A.) Oct. 2, 1883.

Nov. 6, 1883.

3,064. J. D. Sprague, London. Latches for doors, windows, &c. June 20, 1883.

3,296. E. M. Loe, London. Window-fastenings. (Com. by W. C. Loe, Paris.) July 3, 1883.

3,309. A. Tylor, London. Preventing waste of water in water-closets, urinals, &c. July 4, 1883.

3,315. W. Wade, Crewe. Fire-grates, &c. July 4, 1883.

Nov. 9, 1883.

3,467. H. J. Haddan, London. Grates. (Com. by E. Breslauer, Berlin.) July 13, 1883.

3,469. H. J. Haddan, London. Cord-fastener for window-blinds, &c. (Com. by D. W. Ernsting, Bremen.) July 13, 1883.

3,512. E. Gilbert and A. E. Gilbert, Dundee. Water-closets. July 17, 1883.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending November 3, 1883.

1,216. G. Napier, Manchester. Construction of walls, partitions, and ceilings of buildings. March 7, 1883. Price 2d.

These walls, &c., are made of slabs of concrete or cement, with V edges which fit into each other. (*Pro. Pro.*)

1,234. J. M. Boekbinder, London. Process of treating plaster of Paris for use in building, &c. March 7, 1883. Price 2d.

To indurate the plaster, a solution of dextrine is added to it. (*Pro. Pro.*)

1,265. T. C. Olney, Manchester. Construction of hot-water apparatus for heating buildings. March 9, 1883. Price 2d.

Closed pipes are used, bnt as the water expands under the influence of the heat, a spring safety-valve is lifted, and the surplus water passes into the supply cistern. (*Pro. Pro.*)

1,271. C. K. Lawton, Manchester. Receptacles used in what are known as "sanitary closets." March 9, 1883. Price 6d.

These have a curved bottom, in which are perforations to allow the liquid to drain off. In a hollow in the bottom may be placed a filtering medium, such as charcoal.

1,282. C. E. Mineard and T. Crapper, London. Ventilating house-drains, &c. March 10, 1883. Price 8d.

This is an improvement on Patent No. 1,628, of 1881, in placing a hot-water circulating cistern round the upcast shaft to induce an upward current of air from the drain. This cistern is fitted with a casing, by passing through which air is warmed before it enters the house or rooms.

1,302. R. Whiston, Wolverhampton. Fastenings for doors, windows, and shutters. March 12, 1883. Price 6d.

The bolts are shot by a worm which is revolved, and thereby made to act against the bolt tail. A frame with teeth thereon is placed in the frame of the window, and an eccentric forces it forward until the teeth engage the sliding sash.

1,317. J. Harsand, London. Apparatus connected with the handle of a valve or other closet, for preventing waste of water. March 13, 1883. Price 6d.

The handle spindle is hollow, and inside slides another spindle, to which is connected the bottom valve lever. On the hollow spindle is pivoted a double stirrup, the lower part of which engages over a projection on the loose spindle, and a stud on the loose spindle actuates the water-supply valve lever. When the handle is lifted the loose spindle is also lifted, until the upper part of the double stirrup comes in contact with a projection on the standard, when the lower part is disengaged, and the loose spindle falls, closing the bottom valve, and allowing the water supply to be shut off as the bellows regulator will allow. In a modification an air cylinder is pivoted on the end of the water-supply valve lever in the upper end, being a small discharge-cock. The piston of this cylinder is lifted by the loose spindle, and the compressed air in the cylinder lifts the lever until the air escapes through the small cock, when the lever descends and shuts off the water supply.

1,337. T. J. Saunders and H. W. Allan, Glasgow. Baths, washing-troughs, &c. March 13, 1883. Price 2d.

The discharge-valve is a tubular plunger, which fits an annular valve seat in the bottom of the bath. The top of the plunger is at the overflow level, and holes are cut therein so that it acts also as an overflow-pipe. (*Pro. Pro.*)

1,363. J. Imray, London. Manufacture of a compound applicable as cement or mortar. (Com. by E. Pick, Paris.) March 14, 1883. Price 4d.

This is composed of gypsum, sulphate of lime, coke dust, and marl, ground and then mixed together while in a heated state.

1,372. J. E. Rendle and F. B. Rendle, London. Glazed structures for horticultural purposes, &c. March 14, 1883. Price 8d.

This relates to the form of the astragals which carry the edges of the sheets of glass, and which are made of sheet metal with flat bearing surfaces for the glass to rest on, and troughs or channels underneath carry off any water. The glass is held in position by strips of metal bent down on the upper surface thereof.

Published during the Week ending November 10, 1883.

1,390. A. J. Boult, London. Material or composition to be used as a substitute for plaster of Paris, Tripoli, or the like and manufacture of the same. (Com. by E. Caspari, Paris.) March 15, 1883. Price 2d.

The plaster stone is burned and then ground together with burned clay and gas-coke.

1,391. E. R. Wethered, Woolwich. Latches, locks, and lock-furniture. March 15, 1883. Price 6d.

This is an improvement on Patent No. 482, of 1882, in forming the incline so that the bolt drops behind it when the door is closed.

1,406. W. Jones, Bangor. Flushing Apparatus. March 16, 1883. Price 2d.

The stand-pipe of the cistern rises a little above the overflow level, and a cap is fitted over its end, which can be raised by a lever, thereby drawing the water up and starting the syphonic action that empties the cistern. (*Pro. Pro.*)

1,426. G. Gore, Balsall Heath. Domestic and like stoves and furnaces, and means for feeding fuel thereto or therein. March 17, 1883. Price 6d.

Behind the grate is a hopper which contains the fuel supply, and the mouth of the hopper opens up through the bottom of the grate. A roller is fitted near the mouth, in which is a long slot carrying a plate of metal which exactly fits the whole passage, and in front of the roller at the back of the bottom of the grate is a wedge-shaped piece of metal. When the roller is made to revolve the plate forces the fuel up into the bottom of the fire, and it then comes in contact with the wedge-shaped piece and is thereby made to slide in the slot, the other edge projecting out the other side of the roller ready for the next supply of fuel.

1,451. J. H. Johnson, London. Manufacture of Portland cement. (Com. by E. J. De Smedt, Washington, and R. W. Lesley, Philadelphia, U.S.A.) March 20, 1883. Price 4d.

A liquid hydro-carbon, or other combustible, is mixed with the cement material prior to the calcining operation. Lime is also combined with the cement rocks when required, to form the cement.

1,488. A. M. Clark, London. Construction of stables drains and floors. (Com. by P. A. H. Basserie, Le Mans, France.) March 21, 1883. Price 6d.

The floors are laid level, and a drain is formed along the length of the stable with a branch into the middle of each stall. These drains are covered by perforated plates.

SEWERAGE MATTERS.

Wolverhampton.—Mr. E. Pritchard, C.E., has prepared a report upon the Wolverhampton sewerage, in which he recommends the expenditure of about 44,000*l.* in new works.

Darlaston.—At a meeting of the Darlaston Local Board last week, a scheme which Mr. E. Pritchard, C.E., had prepared for the sewerage of the district and purification of the sewage, was adopted, and ordered to be forwarded to the Local Government Board for approval. The scheme includes the complete sewerage of the town upon the partial separate system; the conveyance of the sewage to outfall works, there, in tanks, by precipitation and quiescence, to be clarified and partially purified, and afterwards to be filtered through a small area of land, and poured into the Tame, in the parish of Walsall. The total cost of the scheme, exclusive of purchase of land and compensation, was estimated at 18,555*l.*

Wigton (*Cumberland*).—The inauguration of the recently completed works of sewerage and sewage-disposal for this town has just taken place. The works were designed in 1879 by Mr. John S. Hodgson, C.E., Hexham, and include a complete separate system of new surface-water sewers and street-gullies, the subsoil drainage of the site of the town being likewise separately provided for. The system of sewage purification adopted is irrigation and intermittent downward filtration upon a total area of about twelve acres. The total cost of the works, including purchase of land, has been about 8,600*l.* Mr. Thos. Bennett acted as clerk of works throughout.

Willesden.—Sanction has been accorded by the Local Government Board to a scheme of sewerage for a portion of the Willesden district. The cost of the works is estimated at 33,000*l.* The district proposed to be drained is that portion of the Willesden parish lying upon the watershed of the Brent, and comprising about 3,290 acres. The sewage is proposed to be treated by a combined system of chemicals and intermittent filtration through land. The scheme has been prepared by Mr. O. Claude Robson, Engineer to the Willesden Local Board.

CHIMNEYS AT HAMPTON COURT.

SIR,—I fail to see that I have made any mistake in reference to these chimneys. I was fully aware that a restoration had taken place, but, as it appeared to be a genuine one, I said nothing about it in the notes you published with my sketch. The present chimney-tops are, I presume, line-for-line reproductions of others about the Palace, and so are, for the purposes of a sketch, as good as the original ones. ARTHUR KEEN.

Nov. 12.

*** We fear we cannot *quite* accept our correspondent's view of the matter.

KIRBY LONSDALE BRIDGE.

SIR,—If you, or any of your readers, will inform me of the year in which the stone bridge was built over the River Lune, at Kirby Lonsdale, and the name of the builder, I shall be greatly obliged.

ANDREW ROBINSON.

Alexandria-terrace, Lostock Hall, near Preston, Nov. 13, 1883.

GRAPHIC AND ANALYTIC STATICS.

SIR,—I make it a rule not to reply to criticism on my own writings; but there appears in your esteemed journal (Nov. 10th) a review of my book on "Graphic and Analytic Statics," which, though generally favourable, seems to betray a want of appreciation in one or two particulars. I pass over the matter of words, all of which I used advisedly, with the exception of the term "got at." This is an expression which, if it occurs, I have used inadvertently, and should therefore be obliged if your critic would indicate the page and line where it is employed.

In the instances given where I introduce the double integral methods in preference to shorter methods, I have an object in view; and on pp. 140 and 142 I clearly state what that object is, viz., to accustom the student to the use of double limits, in order that he may be able to follow my reasoning in the analytical parts of my work when double integration becomes absolutely necessary.

Regarding the longitudinal slip in straight beams under vertical loading (p. 263), the writer of the article confounds the separate and distinct phenomena of tendency to *slip* and *strain*, or tendency to rupture. The strain in a loaded beam is greatest at its upper and lower limits; but it is evident that, as the strain changes sign at the neutral axis, being compressive above and tensional below, the slip will take place along that axis. Further, let us suppose the beam to be cut in two along the line of the neutral fibre and the two divisions to rest in contact one above the other, in their straight, unloaded condition. Bring a weight to bear at the centre of span, or, in fact, anywhere along the beam, and it will be found that the two beams will slide relatively to each other along their line of tangency or contact. This is the reason why composite beams are sometimes dovetailed or step-jointed together along their lines of connexion.

R. H. GRAHAM.

"LUNCHES."

SIR,—I noticed in your paper of the 10th inst. [p. 637] the letter of "A. H." on this word, in which he mentions the Anglo-Saxon "*hlinc*," which he says means "a ridge of land," and that *lunch* approximates to *lump*.

I write to suggest the Scottish word "links," as we find it in the "Links of St. Andrews," the "Links of Montrose," the "Links of Musselburgh," "Brintsfield Links" in Edinburgh," &c. These are large open spaces corresponding to the English heaths and commons, where the game of golf is played. Some of these are by the seashore, and some inland, but they are all rolling ground, in a natural, uncultivated state, abounding with ridges and hollows, and so far agreeing with the definition of the Anglo-Saxon word "*hlinc*." BELSIZE.

"YE GODS, IT DOTH AMAZE ME!"

SIR,—On reading the address of the President of the Royal Institute of British Architects, as reported in last week's *Builder*, I was surprised at his silence on the question of the New Admiralty and War Offices Competition; and also at the hope he expressed that the model by a *foreigner* would soon be placed in position on one of the pedestals of Blackfriars Bridge.

I for one sincerely trust that nothing of the sort will occur; but that whatever works of art ultimately adorn the bridge will be from the studio of an English artist.

I note that the vote of thanks to the President for his address (embodying this *hope*) was carried by acclamation. B. WILKINSON.

10, *John-street, Adelphi, W.C.*

WHAT IS A NEW STREET?

AT the Hammersmith Police Court on the 7th inst. Mr. Compton Reade appeared to answer an adjourned summons which had been taken out at the instance of the Fulham Board of Works, who sought to recover the sum of 90*l.* apportioned upon him for the paving of Goodwin-road, Shepherd's-bush.

Mr. Besley supported the summons, and said the question for the magistrate to consider was whether Goodwin-road was a street. If it was a street, it followed by law that it was a new street. He read the remarks of Lord Justice Brett in a case to show that a street was formed when the first house was built. Mr. Besley contended that there was not any necessity to show there was a front door opening to the street. Where there were houses on both sides, in common parlance, it was a new street.

Mr. T. E. Jones, clerk of the Board, said the defendant's house, which was in the Coningham-road, flanked on the Goodwin-road, having a side entrance in it, and access to a stable. He showed by a plan that flank walls of other houses abutted on the same road, with back entrances.

Mr. Sheil wished to know how many front doors opened to the road, and was told that there were four. He decided it was not a street, but a back lane, having four houses fronting it. Mr. Besley applied to the magistrate to state a case, but he refused, as he decided upon a question of fact, leaving him to his remedy by *mandamus*.

CASE UNDER THE EMPLOYERS' LIABILITY ACT.

STEPHENS *v.* SIMPSON.

AT the Leeds County Court, on the 9th inst., before Mr. W. T. Greenhow, judge, and a jury, Whiteley Stephens, labourer, Foundry-street, Bank, Leeds, brought an action against Mr. John Simpson, contractor, Vincent-place, Hunslet, to recover 49*l.* 8s. as damages for injuries alleged to have been sustained by him while in the defendant's employ, and through the defendant's negligence. The sum claimed represented one year's wages at 19s. per week. It appeared that on the 20th of August, Stephens, with a number of other men, was engaged in making an excavation in Worrell's-lane, Bramley, for the purpose of laying a drain. The trench was about 4 ft. deep, and to prevent the sides caving in, a stretcher had been placed across to support the earth. Into this hole Stephens was ordered to descend, in order to lay some timber, but in descending he put his foot on the stretcher, which gave way, and he was thrown to the bottom, breaking his right arm. He went to the Leeds Infirmary, where his injury was attended to, and he had not been able to resume work until the 15th of October. It was contended for the plaintiff that the stretcher had been insecurely fastened, and that a ladder ought to have been provided.

For the defence, evidence was called to show that proper stretchers and a ladder had been provided, and that the plaintiff had been guilty of contributory negligence.

The jury, after a short consultation, found a verdict for the defendant.

PROVINCIAL NEWS.

Bury St. Edmunds.—The West Suffolk County Clubhouse, now completed, occupies a site at the corner of Abbey-gate-street and Hatter-street. Portions of the old house at the Hatter-street end of the site have been utilised in the new work, the first floor coming in very conveniently as a mezzanine, and thereby saving cost. The front wall, however, has been pulled down and rebuilt from the ground, so that an entirely new façade is obtained in Hatter-street, a length of 87 ft., with 31 ft. on the Abbeygate-street frontage. Isleham stone lime has been used for the mortar. The principal entrance to the club is in Hatter-street, 22 ft. from the corner, through a circular-headed arched doorway, 5 ft. 6 in. wide, leading into a vestibule 8 ft. 6 in. square. Passing through the vestibule, the hall is entered through a screen in wainscot oak with swing-doors. The greatest width and length of the hall is 19 ft. 6 in. by 19 ft. Directly in front of the screen rises the principal staircase, with a width of 5 ft., in three easy flights, with wide landings between. The floor of the hall is of Hungarian oak parquetry, with border in oak and walnut, wax-polished, and was supplied and laid by Mr. Ebner, of London. The reading-room occupies the whole of the Abbeygate-street frontage. It is 29 ft. long by 18 ft. wide. The dining-room occupies 23 ft. of the Hatter-street frontage; it has an arched recess 14 ft. wide, in which will be placed the sideboard. The whole of the first floor is devoted to the use of the members, and contains a fine suite of apartments. Occupying the whole top of the old house, and projected 9 ft. beyond over the yard at the back, is the billiard-room, an apartment 33 ft. long, 24 ft. wide, and 13 ft. 6 in. high. The floor and back wall are carried by deep flitch girders, supported at one end by massive brick and cement piers rising from the yard, and at the other by the main front wall. The floor is double and perfectly rigid. At the suggestion of a member of the club, the architect has prepared a scheme for the decoration of this room, illustrating in its details field sports and the four seasons. The rooms are ventilated by special air-shafts and flues with mica flap outlet ventilators, and terminated at the top by Boyle's extracting ventilators. The style is "Queen Anne." The fronts are faced with the best picked Suffolk facing bricks, set in white mortar with a good bold joint, the only stonework in the front façades being the red Mansfield plinth and ground-floor moulded window-sills. These windows have also moulded and mitred red brick architraves, rubbed and gauged, set in cement, working five courses to the foot, and moulded keys. The arches to the upper windows are circular and recessed, the outer arch moulded and enriched with the egg-and-dart ornament springing from a moulded string-course similarly treated, whilst the whole of the window-frames are exposed to view, and painted white. A cornice and parapet complete the elevation, the former richly moulded, supported by cantilevers with dentils and the egg-and-dart ornament, the latter terminated with a boldly-moulded capping, the whole in brickwork. The moulded bricks were made from the special designs of the architect, during the winter, at Mr. James Brown's works at Braintree. They are lighter in colour than the main body of the work. The whole of the work has been carried out from the designs and under the superintendence of Mr. E. F. Bishopp, architect, Ipswich. Messrs. Saunders & Sons, of Dedham, Essex, are the contractors. The tiles in the friezes were supplied by Messrs. W. B. Simpson & Sons. Mr. F. C. Andrews, of Bury, has executed the bell-hanging and gas-fitting, and he has also supplied the stoves, gasfittings, &c. Mr. Moore was the foreman of the works.

Bramley (*Surrey*).—A dinner was given a few days since to the *employés* of Messrs. Charles Drake & Co., concrete builders, by Mr. Charles Ede, of Wonersh Lodge, Guildford, for whom Messrs. Drake & Co. have built a large residence, stables, and cottage, &c., in concrete, at Bramley, Surrey.

St. Mary Church, Torquay.—The new town-hall and public offices which the St. Mary Church Local Board decided to build about a a year and a half ago have been completed, and were formally opened on the 13th inst. In the spring of 1882 the Board advertised for competitive designs for a new townhall on the site of the present building. Several architects submitted drawings, and those under the motto of "Justitia" were adopted by the committee, whose selection was duly ratified by the Board. Instructions were given to Mr. G. S. Bridgman, architect, of Torquay,—the author of these plans,—to prepare contract drawings and invite tenders; the result being that the contract for the new building was entrusted to Mr. A. Harris, a local builder. The building is in the Classic style of architecture, freely treated. The elevation in the Babbacombe-road is three stories high, the upper portion being designed as an art school, with north lights. A circular portico with tower connects the two elevations at the main corner. The tower is surmounted by a bold stone-corbelled cornice and slated circular roof, with long iron ornamental finial. The material used for general wall purposes is Barton limestone, with pilasters of finely-dressed material of the same character. The material constituting the mouldings, arches, and other trimmings is rich brown Ham Hill stone supplied by Messrs. Staple & Hann, of Ilminster. The terminals and terra-cotta urn vases, which are of clear cream colour, were manufactured at the Lee Moor Terra Cotta Company's Works, in Cornwall. The windows are glazed with plate glass, with the exception of the sunlights to the first floor, which are glazed with lead lights by Messrs. Beer & Driffield, of Exeter. The ground-floor comprises circular vestibule, surveyor's office, medical officer's room, collector's office, committee-room, parish or general meeting-room, and various offices and anterooms. The entrance-hall and staircase landings are laid with tiles, while the staircase leading to the upper hall is of Forest of Dean stone. On this floor is the board-room, the clerk's room, and public hall, 63 ft. by 32 ft., with cloak and dressing-rooms and other offices adjoining. The fittings on the first-floor landings and in the board-room and large hall are made of pitch-pine. The gas-fittings have been manufactured and supplied by Messrs. Willey & Co., of Exeter. To Mr. Harris, the contractor, has been entrusted the work of furnishing the whole building. The entire cost of the building, including the furniture and the stables adjoining, has been about 3,250*l.*

Bedford.—On the 7th inst. the foundation-stone of a new bridge over the Ouse at Bedford was laid by the Marquis of Tavistock. The bridge is to consist of three wrought-iron segmental arches, with ornamental cast-iron spandrels and parapets, the width of the river being 200 ft. The piers and abutments are to be of concrete, with stone and brick facings. The

roadway is to be 40 ft. wide between parapets, having new approaches on the north and south sides of the river of about 200 yards each. The whole cost of the bridge and approaches will be about 10,000*l*. The engineer for the works is Mr. John J. Webster, Assoc. M. Inst. C.E., of Stephenson Chambers, Lord-street, Liverpool. The contracts include the cost of making the approaches which will cause the bridge to connect Prebend and Little Butt streets, which thoroughfares will open upon Cauldwell-street on the one hand and the Midland-road on the other. For the brickwork, stonework, and making the approaches, the contract of Messrs. Pilling & Co., Manchester, at 3,657*l*. 18s. 3d., has been accepted; and for the ironwork, that of Messrs. Goddard & Massey, Nottingham, at 3,150*l*.; total, 6,807*l*.

Bridgwater.—A new bridge over the river Parrett to connect the eastern and western parts of the town was formally opened by the Mayoress on the 5th inst. It is 36 ft. wide, and consists of seven wrought-iron elliptical ribs, 75 ft. span, with Westwood & Bailey's corrugated road plates, and ornamental cast iron cornice and handrailing. It was erected on the site of a cast-iron bridge, constructed by the Coalbrookdale Company in 1795, which was interesting as one of the first iron bridges in this country. The abutments of the old bridge were extended and utilised for the new one. The work was carried out by Mr. Geo. Moss, contractor, of Liverpool, at a cost of 3,200*l*., from plans prepared by Mr. G. B. Laffan, the borough surveyor, with Mr. R. C. Else, of Bridgwater, as consulting engineer. The wrought-iron work was executed by Messrs. Brettell, of Worcester, and the castings by Messrs. Butt, of Gloucester.

CHURCH-BUILDING NEWS.

Selborne.—The reparation of the south aisle of Selborne Church has been completed, and opened with the harvest thanksgiving. It was necessary to rebuild the east wall, and most of the south wall, which had gone as much as 16 in. and 18 in. from the perpendicular. The roof had slipped still more, and continued to spread. Every feature has been exactly replaced, and the old surface of the stonework, except where whitewashed, has been left, as far as possible, untouched. In taking down the work, jambs of old windows were discovered *in situ*, together with pieces of tracery heads built into rebuilt parts, and these have been reconstructed in the place of the two modern windows. It was not possible to re-use any of the old oak roof except the braced wall-plate on the north side, which, though presenting serious difficulties from its crookedness, has been retained and repaired. The work has been carried out under the direction of Mr. Wm. White, F.S.A., the grandnephew of the great naturalist of Selborne.

Adlington.—On the 3rd inst., Col. Stanley, M.P., laid the foundation-stone of a new church at Adlington, near Chorley, which is designed to meet the wants of a rapidly-increasing population. The new church is estimated to cost about 7,000*l*., and will accommodate 700 worshippers. The style of the edifice will be of a Gothic character. The site has been given by the vicar. The church will consist of chancel, 32 ft. by 25 ft.; nave, 82 ft. by 25 ft.; north and south aisles, 61 ft. by 10 ft. 6 in.; north and south transepts, 25 ft. by 21 ft.; organ-chamber at the north-east, and clergy vestry and choir vestry (these are at the south-east, and can be thrown into one when required). In the plans the tower is placed in the second bay of the south aisle, and the principal entrance is through it. The font is placed in the centre of the nave, near the west wall, and is of Caen stone. The nave will have an arcade of five pointed arches, supported by moulded pillars. The pulpit will be placed on the north side against the jamb of the chancel arch. The whole of the interior will be lined with Farleigh Down Bath stone, and the exterior is to be faced with Yorkshire parpoints, the dressings and mouldings being of red sandstone. The roofs will be open timbered and boarded, and these, together with the benches and choir fittings, will be of pitch-pine varnished. The roofs will be covered with Bangor slates. The tower, which is 19 ft. square and 63 ft. high, is surmounted by a stone spire 72 ft. high. Mr. William Winnard, of Wigan, is the contractor, Mr. Thomas is the clerk of works, and the whole is being carried out under the direction of the architests, Messrs. Thomas D. Barry & Son, of Liverpool.

Oxford.—The new Church of St. Mary and St. John, situate on the Cowley-road, was consecrated on the 6th inst. by the bishop of the diocese. The chancel was erected seven years ago as a memorial to the late Archbishop Longley, and the works since in hand include a nave, north and south aisles, north and south transepts, vestry, organ-chamber, south-west porch, and west end tower and spire. The nave consists of five bays on each side, with an arcaded clearstory over, and the roofs are panelled and boarded. The ground-floor of the tower will form a baptistery, the font standing in the centre, well in view of the congregation. The ringing-floor above is open to the nave on the east side, with a stone gallery front, adding about sixty extra seats when required. The church is warmed by one of Messrs. Haden & Son's combined hot-air and water heating apparatus, placed in a damp-proof chamber under the south transept, and the circulating pipes under gratings in the passage. Special attention has been paid to the ventilation of the church, fresh air from outside being warmed and passed into the church at frequent intervals, three of Buchan's fixed induced self-acting air-ventilators being used for the extraction of the foul air. This church has been designed so as to receive considerable future adornments by carving and stained glass, as thank-offerings or memorials. The scheme for the carving and stained glass has been prepared, by which the Old Testament will form the subjects for the lower part of the carving throughout the nave, the seven orders of angels the middle, and the Benedicti the upper part, angels with musical instruments and emblems of the Passion being carved throughout the chancel. The New Testament will furnish the subjects for all the stained glass figuring, the Old Testament (as shown in the white carving), having paled before the glowing colours and light of the New Testament. The carving has been done by Mr. J. M'Cullock, of London. Messrs. Symm & Co. are the builders, and the work has been carried out under the direction of Mr. A. Mardon Mowbray, architect, of Eastbourne.

Rostrevor.—On the 7th inst. the ancient parish church of Rostrevor, in the North of Ireland, was re-opened after restoration. The old roof has been entirely removed, and a high, open, pitch-pine roof, supported upon moulded stone corbels, substituted. The former western gallery and its low, flat, plaster-work, has disappeared, and in its place has been erected an octagonal-shaped organ and choir gallery, supported by iron columns and moulded beams. The constructional works have been carried out by Mr. Alexander Whelan, builder, Newry, from the designs and under the professional supervision of Mr. William James Watson, architect, Newry.

Stoke Bishop.—The church of St. Mary Magdalene, Stoke Bishop, has just been enlarged by the extension of the chancel and the addition of a transept chapel. The chancel has been extended 12 ft. The choir-stalls have been extended, thus affording room for more choristers. The new chapel is on the south side of the chancel, from which it is divided by double-pointed arches, supported by clustered columns of Devonshire marble, and a light open screen of pitch-pine, varnished; and it opens to the south aisle by a bold arch, Tudor in character. In the south wall of the chapel is a triple lancet window, with a small circular window above, and in the east wall is placed the coloured lancet windows which formerly were in the wall at the east end of the south aisle. The ceiling is of pointed and ribbed timber, stained of a dark colour, similar in character to the other parts of the church, and the floor is laid with parquetry work. The clergy vestry on the north side has been enlarged, and a recess, which was formerly open to the church, has been screened off for the use of the choir. The extension of the chancel and other work has cost about 1,300*l*. It was accomplished by Mr. J. Wilcox, of Weston-super-Mare, from the design of Mr. John Norton, of Bond-street, London, the architect of the church.

Builth.—On the 9th inst., the Bishop of St. David's consecrated the new church which has been built on the site of an old ruined chapel at Bettws-Disserth, an outlying district of the parish of Disserth, about seven miles from the town of Builth. The old chapel had been disused for many years, and when the present vicar of the parish, the Rev. W. E. Pickard, took steps for its restoration it was found necessary to rebuild it entirely. The new church was designed by Mr. J. B. Fowler, architect, of Brecon, and provides accommodation for sixty persons. The stone of the old chapel was used for the walling, as far as it would go, with some new stone from a neighbouring quarry. The window-jambs and doorways, &c., are of red brick, to avoid the expense of stone dressings; the roofs are of open-timber construction, in pitch-pine varnished; the seats, pulpit, lectern, altar-rail, and other fittings being all of the same material. A simple reredos of pitch-pine framing, with illuminated panels of sacred emblems, has been placed at the east end. The old font,—which was found in the churchyard,—has been restored to its proper place. The contractors were Messrs. W. Bowers & Co., of Hereford.

Wandsworth.—Mr. Clay has just executed, from the designs and cartoons of Mr. W. White, F.S.A., some decorations to the ceiling of the apse of St. Michael's, Wandsworth-common. The design represents two tiers of angels, the upper portion including the subject of "St. Michael slaying the dragon"; and in the centre space beneath is a golden cross, crowned by two angels with a golden and jewelled crown, and the legend "I will give thee a crown of glory which fadeth not." The timbers have been picked out with ornamental borders. The work was presented to the church as a dedication gift, on the anniversary of its opening, by Miss Mary Cazenove.

Books.

Five Great Painters. By Lady Eastlake. London: Longmans & Co.

In collecting into two dainty volumes half a dozen essays contributed to the quarterly reviews at various dates within the past ten years, Lady Eastlake has followed an example which is to be commended, and one which might with advantage be still more generally imitated.

It is unpleasant to think of the amount of careful, able, and even brilliant, literary work which is practically consigned to oblivion in neglected magazines and reviews,—work which may perhaps have escaped notice at the time of publication, overshadowed by some subject of passing but all-absorbing interest, and which wants but a second hearing to meet with proper recognition. The review article is the direct descendant of the eighteenth-century essay; and of all forms of literary exercise the biographical essay is the most delightful. When it is found in the pages of a high-class periodical the mere fact of its admission is a guarantee of merit, and the subject is always one of a nature which, even in comparatively incompetent hands, can scarcely be robbed of all interest. It has all the qualifications for effective literary treatment; a central figure of historic interest, an *entourage* which can be brought into light or thrown into shade as the exigencies of the composition may dictate, it is exempt from the unavoidable prolixity and wearisome detail which must go to the making of a complete "Life," and the style may be embellished with anecdote and illustration at will. All the world is curious about the lives, the habits, and the appearance of great men, and the mere announcement of the attempt to exhibit such bespeaks attention and half insures success.

For this class of essay the lives of the great Italian artists of the Renaissance present special attractions, and the group of painters which shed a lustre on the fifteenth and sixteenth centuries have in many respects an unrivalled claim upon our sympathy and admiration. The great names chosen by Lady Eastlake are typical of the highest qualities of art, and almost the only criticism we have to offer on this part of the work is that the word "painter" does not exactly describe their various and marvellous gifts. They were all painters, it is true; but, with two exceptions, they were a great deal besides.

Da Vinci was a painter only by the accident of the time and place of his birth. His few accredited works, and foremost amongst them his immortal *Cena*, show him to have been a painter of the first rank; but he was almost as distinguished as a philosopher, a physicist, and an engineer, and he possessed many other accomplishments. It was his proficiency in music which led to his invitation to settle

in Milan under the patronage of the Grand Duke, and in the list of Da Vinci's attainments which he submitted to Lodovico Sforza he sets out in nine paragraphs his engineering skill, gives one paragraph to architecture, in which he alleges he is "equal to any one in *constructing* buildings, public and private, *and* in conducting water from one place to another"; but it is only incidentally, and as a kind of afterthought, that he lays claim to the ability to "do as much as another" in painting.

Employment as a painter came in his way and he accepted it; but he abandoned painting without a murmur and occupied himself on military engineering when called upon. Michelangelo, it is true, acted in a similar capacity, but he accepted such work reluctantly and under protest, as "it was not his profession,"—and he returned to his true profession of a sculptor at the first opportunity. It is probable that if our Shakspeare had been a Florentine and a Cinquecentist he would, from the force of circumstances, have been a painter,—and it is almost certain that if Da Vinci had been an Englishman of Elizabeth's time he would have been distinguished with Shakspeare as a dramatist, or with Bacon as a philosopher.

His special characteristics are versatility and thoroughness, and the completeness with which he did all that he undertook to do is the reason why he has left so small a quantity of accomplished work behind him. Of his architectural skill no practical evidence remains; but his sketches recently collected in a magnificent work by Jean Paul Richter show that he had thoroughly mastered the conventional quasi-classical architecture of his day, and that the statement that he was "equal to any one" in constructing buildings was no idle boast. It was in construction that his real strength lay. Amongst the sketches before referred to is one for a dome identical with the system used by Sir C. Wren at St. Paul's; an intermediate truncated cone carrying the crowning cupola and supporting the centreing for the outer visible dome. Every detail is worked out with the minutest care, and not a point is left unprovided for.

Of his want of moral fibre and the light-hearted way in which he changed sides, transferrring his allegiance to the enemies of his country, Lady Eastlake speaks without reserve; and we suppose that the charges of turpitude must be admitted. He was a courtier living in a scandalously corrupt age. His favourite motto was, "Flee from storms"; and when social or political storms began to gather, he was off at once. His power of observation was astounding, and no less so his wonderful penetration and generalisation. He had trained his left hand to an amazing precision of draughtsmanship, and he had studied with unflagging patience all the possibilities of pictorial composition. But he was no colourist, and, a sceptic at heart, he was moved by no religious fervour such as that which vivified the works of his less accomplished predecessors. He has left almost the greatest name in the world of art, and a unique reputation for the variety and perfection of his multitudinous attainments.

There can be no stronger contrast to the handsome, accomplished, courtly, and unprincipled Da Vinci than the rugged figure of Michelangelo, whose reputation, won amidst hardships, sorrows, and discouragements such as would have broken any other heart, is, like his works, colossal. His character had all the firmness and consistency which Da Vinci lacked, and he scorned to compromise his conscience for fear or favour. He was passionately attached to the sculptors' art which was, he said, "his profession." And although he became in turn painter, architect, and engineer, and overcame the difficulties of each, his heart was in his own proper work.

Only one other form of art really engaged his affection, that of poetry; and in his sonnets he has reached a level of excellence which would have gone far to immortalise him if his stupendous achievements as a sculptor had not eclipsed his fame as a poet.

Of his love of truth in a lying age,—of his courage and manliness amongst cowards and time-servers,—of his deep religious sense in an age of scoffing infidelity, Lady Eastlake gives a vigorous and touching picture; and it is easy to see that her warmest sympathies are with this grand old Puritan of the Italian Renaissance. His career was an unvarying succession of calamity and vexation, of labours uncongenial and unrequited,—of public injustice and domestic ingratitude. His image is at once the grandest and the saddest in the whole range of Italian art. His solitary life was protracted beyond the allotted span, and with accumulating wrongs gnawing at his heart, he went to his grave "bowed down with the contemplation of human wickedness and woe."

Raffaelle, who was eight years the junior of Michelangelo, lived but thirty-seven years, but they were years, as far as we can judge, of unalloyed happiness. No painter has left such unmistakable signs of the thorough enjoyment of his life and his art. Lady Eastlake is at some pains to dispel the fables which have clustered round his remarkable career, and especially the discreditable story of the Fornarina. Her portrait of him is singularly clear and graphic, and shows us a handsome young man, scarcely reaching the middle height, slight of build, yet graceful and lithe of figure, variously accomplished, and passing with airy tread amongst the flowers with which his path is strewn, pushing on from success to success with full assurance of his mastery and his reward. His industry was amazing, and he has left us a legacy of works which are as numerous as they are excellent. He is a painter *par excellence*, and although by the accident of his position in the Papal court he was on the Commission for rebuilding St. Peter's, and although he tried his hand at poetry, as was the fashion of his time, it is as a painter, and a painter only, that he will be for ever remembered.

The great master of colour receives the honour of two separate essays from Lady Eastlake's pen; and his abnormally long and varied life, and the supreme quality of his art, deserve no less. In treating of this artist the writer's style seems almost to have caught the glow of his incomparable gift, so vividly does she bring before us the characteristics of his life and work. His personal character is not free from the charges which have been brought against Da Vinci, and his suspicious intimacy with the dissolute and unprincipled Aretino gives a colour to the surmise that his private life was far from respectable. His constitution was of adamant; he never knew an illness; and on the threshold of his hundredth year he was carried off, not by declining health or strength, which had scarcely shown themselves, but by the swift and awful terrors of the plague.

One only life seems out of place in this collection of Italian painters, the strange figure and personality of Albert Dürer. One cannot help wishing that the series had included a devotional painter, such as Angelica or Bartolommeo, or even a Giotto or Perugino, and had thus been confined to Italy. The genius of Nuremberg might well have formed one of another group. He combined the rough integrity of Michelangelo with some of the grace of Raffaelle, the versatility of Da Vinci, and the possession of a colour-sense not far inferior to Titian himself. And he had a vein of humour (often, it must be admitted, by no means delicate or refined) which none of these possessed. But in spite of his skill as a painter, his reputation rests mainly on his power of draughtsmanship, and his facility as an engraver, and on the mixture of the profoundest religious feeling with a grotesque method of expression. It is a satisfaction to learn from Lady Eastlake that the stories of the shrewishness of his wife rest on no better foundation than many another long-lived conjugal scandal.

In spite of some very minute criticisms, the perusal of Lady Eastlake's charming studies does not greatly disturb the traditional aspect of the subjects of her graceful pen. We still see that strength is the mark of Michelangelo, and grace that of Raffaelle; that Da Vinci was the great master of line and expression, and Titian the king of colourists. All these great men,—save one,—pursued their art under disadvantages, and surrounded by discouragements and privations. If they could return to us nothing would strike them with greater wonderment than the easy lives and assured reward of their fellow artists. No "English nobleman" would now think of remunerating our Dürer with "a florin" (or its modern equivalent) for a portrait, even if only done in chalk; and the Titian of to-day who, like the Vecelli of old, is the friend and associate of princes, is at least free from the necessity of presenting his royal patron with fourteen pictures in succession, as gentle reminders that his first commission still remains unpaid for.

Lady Eastlake ascribes with almost too much modesty her success in the task she has undertaken to the teaching and example of her accomplished husband. But it is evident that she possesses special qualifications for the work,—a clearness of vision, a feminine curiosity concerning personal traits, a delicate grace of expression, and, moreover, a keen sense of the humorous which lights up her work with pleasant passages such as those in which she proves, with mischievous ingenuity, that Dürer's long ringlets were due to art and not the gift of nature.

We shall greet with pleasure every fresh essay by the same pen; and in concluding our notice of what she has already given us, we must not omit to mention the excellent manner in which the publishers have performed their part of the work. It is hardly necessary to open these volumes to see that a nice taste has presided over their production.

Miscellanea.

Exhibition of Architectural Drawings at Bradford.—An interesting collection of drawings is now on view in the Art Gallery of the Free Library, Bradford, the work of articled pupils in the offices of the architects and surveyors of the town. Some months ago the Council of the Bradford Society of Architects and Surveyors, with a view to promote increased study and interest in their profession on the part of the pupils, invited a competition, by offering prizes and certificates of success to the authors of the best drawings of certain specified subjects. In response to their invitation thirteen sets of designs have been received, numbering altogether about fifty drawings, and, after careful consideration, the prizes have been awarded as follows:—Architectural subjects: First prize, Mr. A. A. France, pupil with Messrs. Milnes & France; second prize, Mr. Louis Ambler, pupil with Messrs. W. & R. Mawson; third prize, Mr. W. Broderick Clarkson, pupil with Messrs. T. H. & F. Healey. Surveying subjects: First prize, Mr. Thomas H. Smith, pupil with Messrs. Smith, Gotthardt, & Co.; second prize, Mr. W. H. S. Dawson, pupil with Mr. Joseph Cowgill. All the competitors are under twenty-two years of age. They met the members of the society at the Alexandra Hotel on the 8th inst, when Messrs. W. T. McGowan, Town Clerk, and Mr. J. H. Cox, Borough Surveyor, were present. After tea a short meeting was held, when the secretary read the report and award of the judges, and each of the successful competitors received from the president (Mr. T. H. Healey) a certificate and cheque for the amount of his prize. Mr. McGowan gave an interesting address to the students.

The Cork Exhibition Buildings.—A meeting of the Corporation of Cork was held on the 9th inst., when the question of purchasing the Exhibition buildings and site came on for decision. Mr. John O'Brien proposed, and Alderman Nagle seconded, the adoption of the offer of the Corn Market Trustees to give the premises for 10,000*l.*, and that the Corporate seal be attached thereto. Mr. P. O'Sullivan proposed, and Mr. J. H. Scott seconded, an amendment to the effect that the matter be postponed to the first Friday in December. After a warm debate, continuing for two hours and a half, a division was taken, and a tie was the result, twenty-three members voting for the amendment and as many more for the original resolution. The Mayor declined to give a casting vote. A special meeting of the Council was held on Tuesday last, when another tie resulted, and it was subsequently decided to leave the question for the consideration of the new Council in December.

Insanitary Dwellings in St. Luke's, Middlesex. — The Vestry of St. Luke's, Middlesex, immediately adjoining the City, have decided to apply to the Home Secretary for power to enforce the 35th section of the Sanitary Act, 1866, which requires houses let in tenements, which abound in this parish, to be properly registered, enables the parochial sanitary authorities to inspect the apartments and ascertain the number of their inmates, and to call upon the owners to render them fit for human habitation. The completion of the Golden-lane improvement, at a cost of 80,000*l.*, resulting in the demolition of former dwellings, has led to disgraceful overcrowding of the neighbouring tenement property, with which the Vestry seeks enlarged powers to deal.

"Bath in 1983."—This was the title of a paper read by the Rev. George Tugwell at a meeting of the Bath Literary and Philosophical Association on the 9th inst. Describing his vision of Bath a hundred years hence, he said :—

"We see a star-like series of wide and stately streets radiating from the central tower of our grand old abbey church; noiseless streets, paved with a material at once yielding and indestructible; streets shaded with avenues of flowering shrubs and evergreen trees, streets cooled in summer with fountains and rivulets of plashing water, and lighted from unseen sources by a diffused radiance which cannot be distinguished from the sheen of a clouded summer's noon. The houses are constructed inside and out of the brick of the future,—hard and glossy as a flint, many-coloured as a chameleon, always beautiful and always clean. Stretching far away into the neighbouring shady combes, and beyond the surrounding sunny heights, we behold an infinite expanse of isolated mansions for the rich, and groups of comfortable cottages for the poor. Each block of buildings stands in its own ground of scented garden and verdant meadow. Each house is supplied with all the necessaries of food by means of underground parcels railways, orders being telephoned and delivery advised by the same means. There are no coals, gas, or candles in the city. Heat, light, and motion being merely correlative forms of force, a single wire transmits the required amount of energy, which is differentiated by a simple mechanical arrangement, so that by turning one tap heat passes into every room, by turning another electric lamps are kindled, and from a third sufficient power is obtained to drive the machinery which effects the cleaning, the carrying, and the other like operations of every household."

The Surveyors' Institution.—At the opening meeting of this Institution on the 12th ult., an address was read by the President, Mr. Thomas Smith Woolley. The address, which was a very able and well-written one, dealt mainly with subjects connected with the landed interest. In addressing the students of the Institution, Mr. Woolley said,—"I shall venture, in virtue of my office, and by reason of the great interest and hearty pride which I take in my profession, to tender some earnest advice to the students of the Institution, those alike who are preparing for the important duties of urban surveyors of all classes, and for the branches of the profession more immediately connected with land,—I say to each, use all possible energy to become a master in your craft, but do not stop there; find time and make opportunity for culture in other directions. It is one of the singular advantages of our profession, that even the smallest smattering of, *a fortiori*, a real acquaintance with geology, archæology, botany, or natural history, and notably a knowledge of the chronicles of England, the historic sites, including those of the great baronial and ecclesiastical establishments and the homes of our great men, add immensely to the interest of our professional vocations."

The late Mr. R. C. Page.—A committee has been formed, of which the President of the Architectural Association is chairman, to raise a fund for a memorial to the late Richard C. Page, who for so many years was an active and energetic member of the Architectural Association, and for four years one of the Hon. Secretaries, and last Session a Vice-President. It is proposed to publish twenty-five photo-lithograph copies of his Pugin drawings, the originals of which were exhibited at the last *conversazione*. They will be printed on stout paper, interleaved, with a photo-portrait of Mr. Page, preface, index, and list of original subscribers; the book will be handsomely bound in cloth, with gilt lettering and edges. Subscribers of 12s. 6d. and upwards will receive gratis a copy of this memorial work; and the surplus funds will be devoted to raising a permanent memorial, the nature of which must depend upon the amount collected. Mr. Arthur E. Northcote, 120, Belgrave-road, S.W., is acting as hon. secretary of the committee.

Munificent Gift to Glasgow University. Mrs. John Elder, Claremont House, Glasgow, has given 12,500*l.* to the Senate of Glasgow University for the endowment of a Chair of Naval Architecture. Several years ago Mrs. Elder, whose husband was the head of the famous Clyde shipbuilding company of John Elder & Co., gave 5,000*l.* to the Chair of Civil Engineering in the University.

A London Music Hall Burned Down.—A fire broke out, shortly before five o'clock on Tuesday morning, at the Raglan Music-hall, Union-street, Borough, and it resulted in the total destruction of the building. A fire of a destructive nature occurred at the hall on September 28, 1871.

Institution of Civil Engineers.—The success which attended the course of lectures delivered this year has induced the Council to make arrangements for a similar series next session. Electricity, one of "the Great Sources of Power in Nature," which, according to the charter, it is the object of the civil engineer to direct,—was then dealt with. Another most important source will now be treated, namely, "Heat in its Mechnical Applications." The lectures will be delivered on Thursday evenings, at eight p.m., in the months from November to April, as under. The first lecture, on "The General Theory of Thermodynamics," was delivered on the 15th by Professor Osborne Reynolds, F.R.S.; the remainder of the course will include the following lectures :—

Dec. 6th.—"The Generation of Steam, and the Thermodynamic Problems involved." By Mr. W. Anderson, M. Inst. C.E.

Jan. 17th, 1884.—"The Steam Engine." By Mr. E. A. Cowper, M. Inst. C.E.

Feb. 21st.—"Gas and Caloric Engines." By Professor Fleeming Jenkin, F.R.SS.L. & E., M. Inst. C.E.

March 20th.—"Compressed Air and other Refrigerating Machinery." By Mr. A. C. Kirk, M. Inst. C.E.

April 3rd.—"Heat-Action of Explosives." By Captain Andrew Noble, F.R.S., M. Inst. C.E.

The Council also invite original communications on any one of a very long and varied list of subjects, to be obtained from the secretary, for which premiums may be awarded from funds entrusted to them under the provisions of the "Telford Fund," the "Manly Decoration," the "Miller Fund," and the "Howard Bequest."

Wooden-Fronted Houses in Edinburgh. A correspondent of the *Scotsman* lately called attention to one of these houses in the Lawnmarket (next to the back of the Free Church Assembly Hall), in the demolition of which, he thought, evidence was afforded of the correctness of Dr. Robert Chambers's theory that the wooden fronts were not an afterthought, but formed part of the original design. A popular tradition is that, to clear the Borough Muir of Wood, the citizens were allowed timber free to form *eiks* to their houses, and hence the wooden fronts. Dr. R. Chambers, after careful examination, pointed out that this was not so, but that the fronts were originally open verandahs (one for each flat), and that they were, in more recent times, plastered up. Messrs. Kinnear & Peddie, architects, write to say that they are preparing minute drawings of the house in question in all its details, which they intend shall form the subject of a paper to be communicated to the Royal Society of Antiquaries. They cannot agree with the previous correspondent that the wooden construction corroborates Dr. Chambers's theory that the fronts of these houses were open verandahs. The timber framework as it is now seen differs widely from that of the original structure.

A New Residential Locality.—We notice that the locality of the famous residence of Horace Walpole is now being invaded by the sound of the workmen's hammer. A considerable portion of the Waldegrave Park Estate, formerly the grounds of the Strawberry Hill Mansion, was some months since laid out for building purposes, and the residences now being erected thereon are letting and selling rapidly. A further portion is about to be sold by auction in freehold building plots. The lovely scenery of the neighbourhood and the direct railway communication to the City and West End render the locality a suitable one for the erection of residences of a superior class.

"Heath's Fern Portfolio" is the general title of a series of life-size reproductions of ferns, in which the author of "The Fern World" will give what has never before been attempted, namely, absolute *facsimiles* in form, colour, and variation of those beautiful plants, together with letterpress descriptions on the same plates. Mr. Heath's new serial will be published monthly, by Messrs. Sampson Low, Marston, & Co.

Rome.—An important discovery has been made in the Forum, of some rectangular marble pedestals, stumbled upon by mere chance in the course of clearing away the rubbish from what were believed to be only brick piers, of no special interest. These were found to be resting on marble blocks, bearing inscriptions implying their connexion with the Temple of Vesta.

Penselwood.—General Pitt-Rivers has been some days occupied, with eight or nine excavators, in researches at Penselwood, the British city anciently called "Caen Pensanelwit," and which was invested for seven days, A.D. 47, by Vespasian, under Claudius.

Glasgow Iron Moulders' Wages.—The iron moulders in the northern district of Glasgow have just received an increase of pay, which raises the minimum wage to 7¾d. per hour.

TENDERS.

For Presbyterian Church, Richmond. Messrs. Wallace & Flockhart, architects, Old Bond-street. Quantities by Mr. J. Warrington Morris :—

Wall Bros., Kentish-town	£4,152	0	0
Dowsing & Sons, Notting-hill	4,140	0	0
Robertson, Edgware-road	4,100	0	0
Tavener & Sons, St. John's Wood	3,960	0	0
Adamson & Sons, Putney	3,890	0	0
D. D. & A. Brown, Camberwell	3,680	0	0
Carless & Co., Richmond	3,520	0	0
F. Sims, Richmond	3,495	0	0

For the erection of the new Post-office at Waltham-cross, on the Estate of Mr. R. B. Colvin, J.P. Mr. John Hudson, architect, 80, Leman-street, E. :—

J. Bentley,* Waltham Abbey	£1,550	0	0

* Accepted.

For the erection of a villa residence, Grove-road, George-lane, Woodford, for Mr. C. Collins. Mr. John Hudson, architect :—

J. J. Robson, Woodford (accepted)	£970	0	0

For erecting a new infants' school and altering the boys' and girls' schools, for the Twerton School Board. Messrs. Browne & Gill, architects :—

Williams, Bristol	£1,943	0	0
Bladwell & Parsons, Bath	1,865	0	0
W. Birth, Bath	1,680	0	0
Mercer, Bath	1,677	10	0
Mann, Bath	1,664	0	0
Jarvis, Weston	1,660	0	0
Morgan & Lovell, Bath	1,635	10	0
Chancellor, Twerton	1,565	0	0
Emery, Bath	1,506	0	0
Laver,* Bath	1,474	0	0
Wibley,† Bath	489	10	0

* Provisionally accepted.
† Only for alteration of the present schools.

For rebuilding Nos. 104 & 106, Salmon's-lane, Limehouse. Messrs. T. & W. Stone, architects. No quantities :—

Lewin	£930	0	0
Walker	840	0	0
Beale	826	0	0
Higgs	823	0	0
Forrest	787	0	0
Johnson	757	0	0
Thomson & Tweed	751	0	0
Young	749	0	0
Thomerson & Son	734	0	0
Plant	725	0	0
Salt	690	0	0
Howlett	597	0	0

For alterations to stables, for Messrs. Carter, Paterson, & Co., Croydon. Mr. W. Eve, architect. Quantities not supplied :—

Smith & Son	£493	0	0
Maides & Harper	488	0	0
Doggin	483	0	0
Higgs	440	0	0
Harris & Wardrop	419	0	0
D. D. & A. Brown	399	0	0

For the erection of artisans' dwellings, in Walnut-tree-walk, Lambeth, for Mr. A. Mackenzie. Messrs. Snooke & Stock, architects. Quantities by Messrs. Linsdell & Giffard :—

Holland & Hannen	£4,236	0	0
Carless & Co.	4,205	0	0
Chafen	4,150	0	0
Pack	4,015	0	0
Haines	3,997	0	0
Nightingale	3,987	0	0
Rider & Son	3,978	0	0
J. & J. Greenwood	3,969	0	0
Marsland	3,933	0	0
D. D. & A. Brown	3,756	0	0
Ford & Son	3,745	0	0

For works at the Masons' Arms Public-house, Upper Berkeley-street, for Mr. G. Steer. Messrs. Bird & Walters, architects :—

Godden	£535	0	0
Schlater	435	0	0
Williams & Son	420	0	0
Jackson & Todd	389	0	0
Anley	380	0	0
Mark	379	0	0

For repairs and alterations at the Cemetery Lodge, Brockley, for the St. Paul's Deptford Burial Board. Mr. W. T. Hunt, architect :—

Keen	£200	0	0
H. L. Holloway	173	0	0
Mark Redman	169	0	0
George Hall (accepted)	167	0	0

For alterations and additions, including new shop front, at 75, Westbourne-grove. Mr. Spencer W. Grant, architect, 63, Finsbury-pavement, E.C. :—

Axford	£985	0	0
Emery	925	0	0
Sage	885	0	0
Drew & Cadman	692	0	0
Bray & Pope (accepted)	670	0	0

For fittings at the Storey's Gate Public-house, for Mr. T. S. Manley. Mr. H. I. Newton, architect, 27, Great George-street :—

Godden	£573	0	0
Lamble	570	0	0
Wood (accepted)	507	0	0
Pewterers' Work.			
Mason	£97	15	0
Rogers	95	0	0
Warne	89	0	0
Heath (accepted)	80	0	0

For making, sewering, and kerbing road, on the New Malden Estate. Mr. J. R. Gover, surveyor, 5, Guildhall-chambers, Basinghall-street, E.C.:—

Hare	£619 0 0
Marshall	579 13 0
Carter	578 18 6
Lloyd	561 0 0
Rowland Bros.	535 0 0
Williams	527 0 0
Harris	520 0 0
Woodham & Fry	509 0 0
Bell	504 0 0
Nicholls	503 0 0
Capper	499 5 0
Pizzey	475 0 0
Iles	465 0 0
Free	443 15 0
Atkins	430 0 0
Strachan	410 0 0

For new building in London-wall. Mr. Lewis Solomon, architect, 7, Gray's Inn-square. Quantities supplied by Messrs. Williams & Gritten:—

Smith Bros.	£3,865 0 0
Palmer & Sons	3,550 0 0
Conder	3,539 0 0
Roberts	3,453 0 0
Downs	3,387 0 0
Simpson & Son	3,374 0 0
Morter	3,313 0 0
Patman & Fotheringham (accepted).	3,293 0 0

For alterations and additions to three shops in Seven Sisters-road, Holloway, for Mr. Wood. Mr. Wm. Smith, architect. No quantities:—

J. O. Richardson	£939 0 0
Wilkinson	851 11 0
Wood	775 0 0
Durnford & Langham	719 0 0
Mattock Bros.	677 0 0
Larke & Son	670 0 0
Steel Bros.	653 0 0
Shurmur	645 0 0
Harper	637 0 0
Stevens	539 0 0

For works at the Clarendon Public-house, Mildmay Park-road, for Mr. R. C. Wilson. Mr. G. Edwards, architect:—

Homan & Co.	£470 0 0
Green	335 0 0
Rayment & Son	284 0 0
Burton	242 0 0
Scharien & Williams	216 0 0

For the erection of a block of school buildings, in Carpenter's-road, Stratford, E., for the West Ham School Board. Mr. J. T. Newman, architect, 2, Fen-court, Fenchurch-street. Quantities supplied by Messrs. Curtis & Sons:—

	Superstructure.	Extra Foundations.
W. J. Hack	£10,099	£1,187
Martin, Wells, & Co.	9,598	1,402
B. E. Nightingale	9,684	1,080
F. E. Bolding	9,977	657
W. D. Tink	9,257	982
Hearle & Son	9,292	869
J. Parfitt	8,697	1,423
J. W. Hobbs	9,200	850
J. G. Hoskins	9,317	716
J. Morter	9,117	730
C. Cox	9,100	700
A. Reed	8,890	759
O. T. Gibbons	8,900	700
W. Gregar (accepted)	8,867	670
D. D. & A. Brown	8,996	539
M. Gentry	8,500	720

[Total cost per head, including extra foundations, owing to site being 4 ft. 6 in. below the level of road, 7*l.* 15s. 6d.]

For the enlargement of St. Mark's Church, Dawlish, and the re-seating of the new aisle:—

H. Baker, Dawlish	£1,269 0 0
S. Friend, Dawlish	1,250 0 0
Stevens & Bastow, Bristol	1,249 0 0
James Loveys, Dawlish	1,136 16 0
D. Reynolds, Exeter	1,052 5 0
E. Andrews, Teignmouth	1,029 4 0
H. Phillips, Exeter	1,020 11 0
F. Durke, Tiverton	998 0 0
Luscombe & Sons, Exeter	982 0 0
John H. Foaden, Ashburton	949 16 0
James Hawkins, Dawlish	949 10 0
J. G. Stephens, Exeter (accepted)	943 0 0

For pulling down and rebuilding premises, John-street, Cow-cross. Mr. S. C. Aubrey, architect. No quantities:—

Anley	£1,090 0 0
Jarvis & Sons	1,014 0 0
Thomerson & Son	844 0 0

For sewer outfall extension, Oldershill Estate, Finchley. Messrs. Hickson & Son, surveyors:—
John Bell, Wood-green (accepted).

For making up Sparsholt-road, for the Islington Vestry. Mr. C. Higgins, surveyor:—
John Bell, Wood-green (accepted).

For laying 12-inch pipe-sewer, for the Tring Local Board:—

Thomas & Cardus	£417 0 0
John Bell, Wood-green	342 0 0
G. Capper (accepted)	335 10 0

For stream diversion and concrete culverts, at Winchmore-hill, for Mr. Sugden. Messrs. Hickson & Sons, surveyors:—
John Bell, Wood-green (accepted).

For the erection of house, 7, Middlesex-street, Whitechapel, for Mr. A. A. Romain. Mr. C. A. Legg, architect, Mile-end:—
Alfred Elves, Mile-end (accepted) £550 0 0

For additions to stabling, &c., to premises, Alderney-road, Mile-end, for Mr. R. Ayton. Mr. C. A. Legg, architect:—

J. R. Hunt	£269 0 0
F. Wood	261 0 0
E. & E. Parrott (accepted)	248 0 0

Erratum.—In the list of tenders for fixtures in a tailor's shop at Kingsland (p. 639, last week), Messrs. Scharien & Williams, one of the firms tendering, were, by a printer's error, described as "architects."

To Contributors and Correspondents.

All LETTERS and COMMUNICATIONS referring to LITERARY and ARTISTIC MATTERS must be addressed—

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Covent Garden, W.C.,"

And not to any individual by name.

A. J. C. (the freezing bursts them, and you find it out when the thaw comes).—H. A.—R. M.—S. M. (drawing received).—W. S.—Madras.—A Fellow.—J. W.—R. H. C. (thanks).—E. R. (shall hear).—W. W. & Co. (should send lists and amounts).—J. G. A. G.—E. E.

Correspondents should address the Editor, and *not* the Publisher, except in cases of business.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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